1 Econ.Anal.Quiz.2.14.10.16 NEPTUN: Név:

(1) Suppose that the dynamics of a two state stochastic system is generated by the matrix $\begin{pmatrix} \frac{2}{5} & \frac{1}{2} \\ \frac{3}{5} & \frac{1}{2} \end{pmatrix}$. Find the steady state probability vector $\begin{pmatrix} p_1 \\ p_2 \end{pmatrix}$. How much is p_1/p_2 ?

A) $\frac{5}{6}$, B) $\frac{17}{6}$, C) $\frac{7}{6}$, D) $\frac{11}{6}$, E) $\frac{13}{6}$

(2) Let us take the following mapping $\phi : \begin{pmatrix} x \\ y \end{pmatrix} \to \begin{pmatrix} 2 & z \\ 2 & 1 \end{pmatrix} \begin{pmatrix} x \\ y \end{pmatrix}$. How much is z, if ϕ is not invertible?

A) -2, B) 1, C) -1, D) -3, E) 0

(3) Compute $\begin{pmatrix} a & b \\ c & d \end{pmatrix} = \begin{pmatrix} 1 & 4 \\ 0 & 2 \end{pmatrix}^{-1}$. How much is $a + 2b + 3c + 4d$?

A) -4, B) -1, C) -5, D) -3, E) -2

(4) Let $f(x) = 5x + 9$. Compute $f^{-1}(x) = cx + d$. How much is $2c + 3d$?

A) -9, B) -8, C) -7, D) -5, E) -6

(5) Let $f(x) = 2x - 5$ and $x_0 = 9$. Compute $f^9(x_0)$.

A) 2052, B) 2053, C) 2054, D) 2051, E) 2055

(6) One of the eigenvectors of the matrix $\begin{pmatrix} 3 & 5 \\ 5 & 3 \end{pmatrix}$ is $\begin{pmatrix} 1 \\ -1 \end{pmatrix}$. What is the corresponding eigenvalue?

A) -1, B) 0, C) -2, D) -3, E) 1

1^1: 2^1: 3^1: 4^1: 5^1: 6^1:

(1) Let us take the following mapping $\phi : \begin{pmatrix} x \\ y \end{pmatrix} \to \begin{pmatrix} 1 & z \\ 1 & 3 \end{pmatrix} \begin{pmatrix} x \\ y \end{pmatrix}$. How much is z, if ϕ is not invertible?
A) 2, B) 1, C) 5, D) 4, E) 3

(2) One of the eigenvectors of the matrix $\begin{pmatrix} 4 & 6 \\ 6 & 4 \end{pmatrix}$ is $\begin{pmatrix} 1 \\ -1 \end{pmatrix}$. What is the corresponding eigenvalue?
A) -2, B) -3, C) 1, D) -1, E) 0

(3) One of the eigenvalues of the matrix $\begin{pmatrix} 2 & 3 \\ 0 & 5 \end{pmatrix}$ is 5. Compute the correspondig eigenvector $\begin{pmatrix} x \\ y \end{pmatrix}$. How much is x/y ?
A) $-\frac{7}{2}$, B) $-\frac{3}{2}$, C) $-\frac{9}{2}$, D) $-\frac{5}{2}$, E) $-\frac{1}{2}$

(4) Let $f(x) = 5x + 7$. Compute $f^{-1}(x) = cx + d$. How much is $2c + 3d$?
A) $-\frac{19}{5}$, B) $-\frac{17}{5}$, C) $-\frac{14}{5}$, D) $-\frac{16}{5}$, E) $-\frac{18}{5}$

(5) Compute $\begin{pmatrix} a & b \\ c & d \end{pmatrix} = \begin{pmatrix} 2 & 1 \\ 0 & 1 \end{pmatrix}^{-1}$. How much is $a + 2b + 3c + 4d$?
A) $\frac{3}{2}$, B) $\frac{11}{2}$, C) $\frac{7}{2}$, D) $\frac{9}{2}$, E) $\frac{5}{2}$

(6) Let $f(x) = 2x - 4$ and $x_0 = 8$. Compute $f^{11}(x_0)$.
A) 8194, B) 8193, C) 8196, D) 8197, E) 8195

$_1$1: $_2$1: $_3$1: $_4$1: $_5$1: $_6$1:

(1) Compute $\begin{pmatrix} a & b \\ c & d \end{pmatrix} = \begin{pmatrix} 3 & 4 \\ 0 & 2 \end{pmatrix}^{-1}$. How much is $a+2b+3c+4d$?
A) 0, B) 1, C) 2, D) -1, E) 3

(2) Suppose that the dynamics of a two state stochastic system is generated by the matrix $\begin{pmatrix} \frac{1}{10} & \frac{9}{10} \\ \frac{9}{10} & \frac{1}{10} \end{pmatrix}$. Find the steady state probability vector $\begin{pmatrix} p_1 \\ p_2 \end{pmatrix}$. How much is p_1/p_2 ?
A) 1, B) 4, C) 0, D) 2, E) 3

(3) One of the eigenvectors of the matrix $\begin{pmatrix} 3 & 4 \\ 4 & 3 \end{pmatrix}$ is $\begin{pmatrix} 1 \\ 1 \end{pmatrix}$. What is the correspondig eigenvalue?
A) 7, B) 9, C) 10, D) 8, E) 11

(4) Let $f(x) = 5x + 9$. Compute $f^{-1}(x) = cx + d$. How much is $2c + 3d$?
A) -4, B) -3, C) -2, D) -6, E) -5

(5) Let $f(x) = 2x - 4$ and $x_0 = 8$. Compute $f^{11}(x_0)$.
A) 8193, B) 8195, C) 8196, D) 8194, E) 8192

(6) Let us take the following mapping $\phi : \begin{pmatrix} x \\ y \end{pmatrix} \to \begin{pmatrix} 4 & 3 \\ 4 & 4 \end{pmatrix} \begin{pmatrix} x \\ y \end{pmatrix}$. How much is the signed area of the image of the unit square?
A) 4, B) 7, C) 3, D) 6, E) 5

$_1{}^1$: $_2{}^1$: $_3{}^1$: $_4{}^1$: $_5{}^1$: $_6{}^1$:

(1) Let us take the following mapping $\phi : \begin{pmatrix} x \\ y \end{pmatrix} \to \begin{pmatrix} 4 & 4 \\ 2 & 1 \end{pmatrix} \begin{pmatrix} x \\ y \end{pmatrix}$. How much is the signed area of the image of the unit square?
A) -8, B) -6, C) -5, D) -4, E) -7

(2) Suppose that the dynamics of a two state stochastic system is generated by the matrix $\begin{pmatrix} \frac{1}{2} & \frac{1}{2} \\ \frac{1}{2} & \frac{1}{2} \end{pmatrix}$. Find the steady state probability vector $\begin{pmatrix} p_1 \\ p_2 \end{pmatrix}$. How much is p_1/p_2 ?
A) 2, B) 0, C) 1, D) -2, E) -1

(3) Let $f(x) = 2x + 3$. Compute $f^{-1}(x) = cx + d$. How much is $2c + 3d$?
A) $-\frac{7}{2}$, B) $-\frac{15}{2}$, C) $-\frac{11}{2}$, D) $-\frac{13}{2}$, E) $-\frac{9}{2}$

(4) Let $f(x) = 2x - 4$ and $x_0 = 5$. Compute $f^{11}(x_0)$.
A) 2051, B) 2052, C) 2053, D) 2054, E) 2055

(5) One of the eigenvectors of the matrix $\begin{pmatrix} 1 & 5 \\ 5 & 1 \end{pmatrix}$ is $\begin{pmatrix} 1 \\ -1 \end{pmatrix}$. What is the corresponding eigenvalue?
A) -2, B) 0, C) -3, D) -4, E) -1

(6) Compute $\begin{pmatrix} a & b \\ c & d \end{pmatrix} = \begin{pmatrix} 1 & 1 \\ 0 & 1 \end{pmatrix}^{-1}$. How much is $a + 2b + 3c + 4d$?
A) 4, B) 6, C) 5, D) 3, E) 2

$_1{}^1$: $_2{}^1$: $_3{}^1$: $_4{}^1$: $_5{}^1$: $_6{}^1$:

(1) One of the eigenvectors of the matrix $\begin{pmatrix} 1 & 3 \\ 3 & 1 \end{pmatrix}$ is $\begin{pmatrix} 1 \\ 1 \end{pmatrix}$. What is the correspondig eigenvalue?
A) 5, B) 3, C) 6, D) 7, E) 4

(2) Let us take the following mapping $\phi : \begin{pmatrix} x \\ y \end{pmatrix} \to \begin{pmatrix} 1 & 4 \\ 2 & 3 \end{pmatrix} \begin{pmatrix} x \\ y \end{pmatrix}$. How much is the signed area of the image of the unit square?
A) -6, B) -4, C) -5, D) -7, E) -8

(3) Let $f(x) = 2x - 5$ and $x_0 = 6$. Compute $f^9(x_0)$.
A) 518, B) 519, C) 517, D) 516, E) 515

(4) One of the eigenvalues of the matrix $\begin{pmatrix} 4 & 2 \\ 0 & 7 \end{pmatrix}$ is 7. Compute the correspondig eigenvector $\begin{pmatrix} x \\ y \end{pmatrix}$. How much is x/y ?
A) $-\frac{1}{2}$, B) $-\frac{3}{2}$, C) $\frac{5}{2}$, D) $\frac{3}{2}$, E) $\frac{1}{2}$

(5) Let $f(x) = 3x + 4$. Compute $f^{-1}(x) = cx + d$. How much is $2c + 3d$?
A) $-\frac{11}{3}$, B) $-\frac{13}{3}$, C) $-\frac{16}{3}$, D) $-\frac{10}{3}$, E) $-\frac{14}{3}$

(6) Compute $\begin{pmatrix} a & b \\ c & d \end{pmatrix} = \begin{pmatrix} 3 & 1 \\ 0 & 1 \end{pmatrix}^{-1}$. How much is $a + 2b + 3c + 4d$?
A) $\frac{13}{3}$, B) $\frac{10}{3}$, C) $\frac{8}{3}$, D) $\frac{11}{3}$, E) $\frac{14}{3}$

1^1: 2^1: 3^1: 4^1: 5^1: 6^1:

(1) Let $f(x) = 2x - 5$ and $x_0 = 6$. Compute $f^{11}(x_0)$.
A) 2052, B) 2051, C) 2054, D) 2055, E) 2053

(2) One of the eigenvectors of the matrix $\begin{pmatrix} 2 & 4 \\ 4 & 2 \end{pmatrix}$ is $\begin{pmatrix} 1 \\ 1 \end{pmatrix}$. What is the correspondig eigenvalue?
A) 10, B) 6, C) 7, D) 8, E) 9

(3) Let $f(x) = 3x + 4$. Compute $f^{-1}(x) = cx + d$. How much is $2c + 3d$?
A) $-\frac{11}{3}$, B) $-\frac{7}{3}$, C) $-\frac{10}{3}$, D) $-\frac{8}{3}$, E) $-\frac{5}{3}$

(4) Compute $\begin{pmatrix} a & b \\ c & d \end{pmatrix} = \begin{pmatrix} 4 & 1 \\ 0 & 3 \end{pmatrix}^{-1}$. How much is $a + 2b + 3c + 4d$?
A) $\frac{23}{12}$, B) $\frac{17}{12}$, C) $\frac{25}{12}$, D) $\frac{29}{12}$, E) $\frac{19}{12}$

(5) Let us take the following mapping $\phi : \begin{pmatrix} x \\ y \end{pmatrix} \to \begin{pmatrix} 3 & 2 \\ z & 2 \end{pmatrix} \begin{pmatrix} x \\ y \end{pmatrix}$. How much is z, if ϕ is not invertible?
A) 6, B) 3, C) 5, D) 4, E) 2

(6) One of the eigenvalues of the matrix $\begin{pmatrix} 2 & 2 \\ 0 & 3 \end{pmatrix}$ is 3. Compute the correspondig eigenvector $\begin{pmatrix} x \\ y \end{pmatrix}$. How much is x/y ?
A) -4, B) -2, C) -5, D) -3, E) -1

${}_1{}^1$: ${}_2{}^1$: ${}_3{}^1$: ${}_4{}^1$: ${}_5{}^1$: ${}_6{}^1$:

(1) One of the eigenvectors of the matrix $\begin{pmatrix} 2 & 3 \\ 3 & 2 \end{pmatrix}$ is $\begin{pmatrix} 1 \\ -1 \end{pmatrix}$. What is the corresponding eigenvalue?
A) -3, B) -1, C) -2, D) -4, E) -5

(2) Let $f(x) = 2x - 3$ and $x_0 = 7$. Compute $f^{10}(x_0)$.
A) 4098, B) 4096, C) 4097, D) 4100, E) 4099

(3) Suppose that the dynamics of a two state stochastic system is generated by the matrix $\begin{pmatrix} \frac{2}{5} & \frac{1}{2} \\ \frac{3}{5} & \frac{1}{2} \end{pmatrix}$. Find the steady state probability vector $\begin{pmatrix} p_1 \\ p_2 \end{pmatrix}$. How much is p_1/p_2 ?
A) $\frac{11}{6}$, B) $\frac{7}{6}$, C) $\frac{17}{6}$, D) $\frac{5}{6}$, E) $\frac{13}{6}$

(4) Compute $\begin{pmatrix} a & b \\ c & d \end{pmatrix} = \begin{pmatrix} 1 & 3 \\ 0 & 1 \end{pmatrix}^{-1}$. How much is $a + 2b + 3c + 4d$?
A) -4, B) 0, C) -3, D) -2, E) -1

(5) Let us take the following mapping $\phi : \begin{pmatrix} x \\ y \end{pmatrix} \to \begin{pmatrix} 4 & 2 \\ 4 & 1 \end{pmatrix} \begin{pmatrix} x \\ y \end{pmatrix}$. How much is the signed area of the image of the unit square?
A) -2, B) -1, C) -4, D) 0, E) -3

(6) Let $f(x) = 2x + 6$. Compute $f^{-1}(x) = cx + d$. How much is $2c + 3d$?
A) -6, B) -7, C) -5, D) -4, E) -8

1^1: 2^1: 3^1: 4^1: 5^1: 6^1:

(1) Let us take the following mapping $\phi : \begin{pmatrix} x \\ y \end{pmatrix} \to \begin{pmatrix} 2 & 4 \\ z & 2 \end{pmatrix} \begin{pmatrix} x \\ y \end{pmatrix}$. How much is z, if ϕ is not invertible?
A) 1, B) 3, C) 0, D) -1, E) 2

(2) Suppose that the dynamics of a two state stochastic system is generated by the matrix $\begin{pmatrix} \frac{1}{5} & \frac{3}{5} \\ \frac{4}{5} & \frac{2}{5} \end{pmatrix}$. Find the steady state probability vector $\begin{pmatrix} p_1 \\ p_2 \end{pmatrix}$. How much is p_1/p_2 ?
A) $\frac{1}{4}$, B) $-\frac{3}{4}$, C) $-\frac{5}{4}$, D) $\frac{3}{4}$, E) $-\frac{1}{4}$

(3) Compute $\begin{pmatrix} a & b \\ c & d \end{pmatrix} = \begin{pmatrix} 2 & 2 \\ 0 & 4 \end{pmatrix}^{-1}$. How much is $a + 2b + 3c + 4d$?
A) 0, B) -2, C) 2, D) 1, E) -1

(4) One of the eigenvectors of the matrix $\begin{pmatrix} 4 & 8 \\ 8 & 4 \end{pmatrix}$ is $\begin{pmatrix} 1 \\ 1 \end{pmatrix}$. What is the correspondig eigenvalue?
A) 8, B) 12, C) 10, D) 9, E) 11

(5) Let $f(x) = 2x + 4$. Compute $f^{-1}(x) = cx + d$. How much is $2c + 3d$?
A) -8, B) -4, C) -7, D) -6, E) -5

(6) Let $f(x) = 2x - 3$ and $x_0 = 6$. Compute $f^9(x_0)$.
A) 1538, B) 1541, C) 1540, D) 1539, E) 1537

1^1: 2^1: 3^1: 4^1: 5^1: 6^1:

(1) Let $f(x) = 5x + 7$. Compute $f^{-1}(x) = cx + d$. How much is $2c + 3d$?
A) $-\frac{17}{5}$, B) $-\frac{18}{5}$, C) $-\frac{19}{5}$, D) $-\frac{21}{5}$, E) $-\frac{16}{5}$

(2) One of the eigenvalues of the matrix $\begin{pmatrix} 1 & 1 \\ 0 & 5 \end{pmatrix}$ is 5. Compute the correspondig eigenvector $\begin{pmatrix} x \\ y \end{pmatrix}$. How much is x/y ?
A) 1, B) -2, C) 0, D) -1, E) -3

(3) Compute $\begin{pmatrix} a & b \\ c & d \end{pmatrix} = \begin{pmatrix} 1 & 4 \\ 0 & 1 \end{pmatrix}^{-1}$. How much is $a + 2b + 3c + 4d$?
A) -1, B) -3, C) -2, D) -5, E) -4

(4) Let us take the following mapping $\phi : \begin{pmatrix} x \\ y \end{pmatrix} \to \begin{pmatrix} 3 & 4 \\ 4 & 2 \end{pmatrix} \begin{pmatrix} x \\ y \end{pmatrix}$. How much is the signed area of the image of the unit square?
A) -13, B) -10, C) -14, D) -11, E) -12

(5) One of the eigenvectors of the matrix $\begin{pmatrix} 1 & 3 \\ 3 & 1 \end{pmatrix}$ is $\begin{pmatrix} 1 \\ 1 \end{pmatrix}$. What is the correspondig eigenvalue?
A) 6, B) 7, C) 5, D) 8, E) 4

(6) Let $f(x) = 2x - 5$ and $x_0 = 9$. Compute $f^{11}(x_0)$.
A) 8196, B) 8195, C) 8193, D) 8194, E) 8197

$_1{}^1$: $_2{}^1$: $_3{}^1$: $_4{}^1$: $_5{}^1$: $_6{}^1$:

(1) Let $f(x) = 2x - 4$ and $x_0 = 7$. Compute $f^{10}(x_0)$.
A) 3077, B) 3078, C) 3080, D) 3076, E) 3079

(2) Let $f(x) = 5x + 6$. Compute $f^{-1}(x) = cx + d$. How much is $2c + 3d$?
A) $-\frac{16}{5}$, B) $-\frac{14}{5}$, C) $-\frac{19}{5}$, D) $-\frac{17}{5}$, E) $-\frac{18}{5}$

(3) Compute $\begin{pmatrix} a & b \\ c & d \end{pmatrix} = \begin{pmatrix} 4 & 1 \\ 0 & 2 \end{pmatrix}^{-1}$. How much is $a + 2b + 3c + 4d$?
A) 3, B) 2, C) 4, D) 1, E) 0

(4) One of the eigenvectors of the matrix $\begin{pmatrix} 3 & 6 \\ 6 & 3 \end{pmatrix}$ is $\begin{pmatrix} 1 \\ -1 \end{pmatrix}$. What is the corresponding eigenvalue?
A) -3, B) -4, C) -1, D) -5, E) -2

(5) One of the eigenvalues of the matrix $\begin{pmatrix} 4 & 5 \\ 0 & 6 \end{pmatrix}$ is 6. Compute the correspondig eigenvector $\begin{pmatrix} x \\ y \end{pmatrix}$. How much is x/y ?
A) $-\frac{11}{4}$, B) $-\frac{13}{4}$, C) $-\frac{9}{4}$, D) $-\frac{7}{4}$, E) $-\frac{5}{4}$

(6) Let us take the following mapping $\phi : \begin{pmatrix} x \\ y \end{pmatrix} \to \begin{pmatrix} 3 & 1 \\ 2 & 2 \end{pmatrix} \begin{pmatrix} x \\ y \end{pmatrix}$. How much is the signed area of the image of the unit square?
A) 1, B) 4, C) 3, D) 2, E) 0

$_1{}^1$: $_2{}^1$: $_3{}^1$: $_4{}^1$: $_5{}^1$: $_6{}^1$:

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(1) Let us take the following mapping $\phi : \begin{pmatrix} x \\ y \end{pmatrix} \to \begin{pmatrix} 3 & 3 \\ 2 & 2 \end{pmatrix} \begin{pmatrix} x \\ y \end{pmatrix}$. How much is the signed area of the image of the unit square?
A) 3, B) 0, C) 2, D) 4, E) 1

(2) Let $f(x) = 2x - 2$ and $x_0 = 5$. Compute $f^{10}(x_0)$.
A) 3073, B) 3074, C) 3070, D) 3071, E) 3072

(3) Compute $\begin{pmatrix} a & b \\ c & d \end{pmatrix} = \begin{pmatrix} 1 & 0 \\ 2 & 2 \end{pmatrix}^{-1}$. How much is $a + 2b + 3c + 4d$?
A) 2, B) -1, C) 3, D) 1, E) 0

(4) Suppose that the dynamics of a two state stochastic system is generated by the matrix $\begin{pmatrix} \frac{3}{10} & \frac{3}{5} \\ \frac{7}{10} & \frac{2}{5} \end{pmatrix}$. Find the steady state probability vector $\begin{pmatrix} p_1 \\ p_2 \end{pmatrix}$. How much is p_1/p_2 ?
A) $\frac{10}{7}$, B) $\frac{9}{7}$, C) $\frac{8}{7}$, D) $\frac{6}{7}$, E) $\frac{5}{7}$

(5) One of the eigenvectors of the matrix $\begin{pmatrix} 3 & 6 \\ 6 & 3 \end{pmatrix}$ is $\begin{pmatrix} 1 \\ 1 \end{pmatrix}$. What is the correspondig eigenvalue?
A) 12, B) 10, C) 8, D) 9, E) 11

(6) Let $f(x) = 2x + 6$. Compute $f^{-1}(x) = cx + d$. How much is $2c + 3d$?
A) -7, B) -5, C) -4, D) -8, E) -6

$_1{}^1$: $_2{}^1$: $_3{}^1$: $_4{}^1$: $_5{}^1$: $_6{}^1$:

(1) Compute $\begin{pmatrix} a & b \\ c & d \end{pmatrix} = \begin{pmatrix} 3 & 0 \\ 3 & 3 \end{pmatrix}^{-1}$. How much is $a+2b+3c+4d$?
A) $\frac{2}{3}$, B) $-\frac{1}{3}$, C) $\frac{1}{3}$, D) $-\frac{2}{3}$, E) $\frac{4}{3}$

(2) Suppose that the dynamics of a two state stochastic system is generated by the matrix $\begin{pmatrix} \frac{2}{5} & \frac{9}{10} \\ \frac{3}{5} & \frac{1}{10} \end{pmatrix}$. Find the steady state probability vector $\begin{pmatrix} p_1 \\ p_2 \end{pmatrix}$. How much is p_1/p_2 ?
A) $-\frac{1}{2}$, B) $\frac{5}{2}$, C) $\frac{1}{2}$, D) $\frac{3}{2}$, E) $\frac{7}{2}$

(3) Let $f(x) = 2x - 2$ and $x_0 = 4$. Compute $f^{11}(x_0)$.
A) 4099, B) 4098, C) 4096, D) 4097, E) 4100

(4) Let $f(x) = 2x + 4$. Compute $f^{-1}(x) = cx + d$. How much is $2c + 3d$?
A) -1, B) -4, C) -5, D) -3, E) -2

(5) One of the eigenvectors of the matrix $\begin{pmatrix} 2 & 4 \\ 4 & 2 \end{pmatrix}$ is $\begin{pmatrix} 1 \\ 1 \end{pmatrix}$. What is the correspondig eigenvalue?
A) 3, B) 5, C) 7, D) 6, E) 4

(6) Let us take the following mapping $\phi : \begin{pmatrix} x \\ y \end{pmatrix} \to \begin{pmatrix} 2 & 3 \\ z & 4 \end{pmatrix} \begin{pmatrix} x \\ y \end{pmatrix}$. How much is z, if ϕ is not invertible?
A) $\frac{8}{3}$, B) $\frac{10}{3}$, C) $\frac{13}{3}$, D) $\frac{11}{3}$, E) $\frac{7}{3}$

$_1{}^1$: $_2{}^1$: $_3{}^1$: $_4{}^1$: $_5{}^1$: $_6{}^1$:

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(1) Compute $\begin{pmatrix} a & b \\ c & d \end{pmatrix} = \begin{pmatrix} 3 & 4 \\ 0 & 1 \end{pmatrix}^{-1}$. How much is $a+2b+3c+4d$?
A) $\frac{8}{3}$, B) $\frac{7}{3}$, C) $\frac{10}{3}$, D) $\frac{5}{3}$, E) $\frac{11}{3}$

(2) One of the eigenvalues of the matrix $\begin{pmatrix} 2 & 3 \\ 0 & 5 \end{pmatrix}$ is 5. Compute the correspondig eigenvector $\begin{pmatrix} x \\ y \end{pmatrix}$. How much is x/y ?
A) $\frac{1}{2}$, B) $-\frac{3}{2}$, C) $-\frac{5}{2}$, D) $-\frac{7}{2}$, E) $-\frac{1}{2}$

(3) One of the eigenvectors of the matrix $\begin{pmatrix} 3 & 7 \\ 7 & 3 \end{pmatrix}$ is $\begin{pmatrix} 1 \\ 1 \end{pmatrix}$. What is the correspondig eigenvalue?
A) 12, B) 9, C) 10, D) 13, E) 11

(4) Let $f(x) = 2x + 5$. Compute $f^{-1}(x) = cx + d$. How much is $2c + 3d$?
A) $-\frac{13}{2}$, B) $-\frac{17}{2}$, C) $-\frac{9}{2}$, D) $-\frac{11}{2}$, E) $-\frac{15}{2}$

(5) Let $f(x) = 2x - 4$ and $x_0 = 6$. Compute $f^{11}(x_0)$.
A) 4100, B) 4102, C) 4103, D) 4101, E) 4099

(6) Let us take the following mapping $\phi : \begin{pmatrix} x \\ y \end{pmatrix} \to \begin{pmatrix} 2 & 2 \\ 4 & 1 \end{pmatrix} \begin{pmatrix} x \\ y \end{pmatrix}$. How much is the signed area of the image of the unit square?
A) -9, B) -10, C) -6, D) -7, E) -8

1^1: 2^1: 3^1: 4^1: 5^1: 6^1:

(1) One of the eigenvectors of the matrix $\begin{pmatrix} 4 & 5 \\ 5 & 4 \end{pmatrix}$ is $\begin{pmatrix} 1 \\ -1 \end{pmatrix}$. What is the corresponding eigenvalue?
A) 1, B) 0, C) -1, D) 2, E) 3

(2) Suppose that the dynamics of a two state stochastic system is generated by the matrix $\begin{pmatrix} \frac{1}{5} & \frac{4}{5} \\ \frac{4}{5} & \frac{1}{5} \end{pmatrix}$. Find the steady state probability vector $\begin{pmatrix} p_1 \\ p_2 \end{pmatrix}$. How much is p_1/p_2 ?
A) -2, B) -3, C) 0, D) -1, E) 1

(3) Compute $\begin{pmatrix} a & b \\ c & d \end{pmatrix} = \begin{pmatrix} 1 & 0 \\ 3 & 4 \end{pmatrix}^{-1}$. How much is $a + 2b + 3c + 4d$?
A) $\frac{7}{4}$, B) $\frac{3}{4}$, C) $-\frac{1}{4}$, D) $\frac{5}{4}$, E) $\frac{1}{4}$

(4) Let $f(x) = 5x + 7$. Compute $f^{-1}(x) = cx + d$. How much is $2c + 3d$?
A) $-\frac{22}{5}$, B) $-\frac{18}{5}$, C) $-\frac{17}{5}$, D) $-\frac{21}{5}$, E) $-\frac{19}{5}$

(5) Let us take the following mapping $\phi : \begin{pmatrix} x \\ y \end{pmatrix} \to \begin{pmatrix} 1 & 4 \\ z & 1 \end{pmatrix} \begin{pmatrix} x \\ y \end{pmatrix}$. How much is z, if ϕ is not invertible?
A) $-\frac{7}{4}$, B) $\frac{1}{4}$, C) $-\frac{3}{4}$, D) $-\frac{1}{4}$, E) $-\frac{5}{4}$

(6) Let $f(x) = 2x - 2$ and $x_0 = 5$. Compute $f^9(x_0)$.
A) 1536, B) 1537, C) 1540, D) 1539, E) 1538

$_1$1: $_2$1: $_3$1: $_4$1: $_5$1: $_6$1:

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(1) Let $f(x) = 2x - 3$ and $x_0 = 6$. Compute $f^{11}(x_0)$.
A) 6149, B) 6148, C) 6147, D) 6146, E) 6145

(2) Compute $\begin{pmatrix} a & b \\ c & d \end{pmatrix} = \begin{pmatrix} 3 & 0 \\ 2 & 3 \end{pmatrix}^{-1}$. How much is $a + 2b + 3c + 4d$?
A) 0, B) -2, C) -3, D) -1, E) 1

(3) Let us take the following mapping $\phi : \begin{pmatrix} x \\ y \end{pmatrix} \to \begin{pmatrix} 2 & 1 \\ 1 & 2 \end{pmatrix} \begin{pmatrix} x \\ y \end{pmatrix}$. How much is the signed area of the image of the unit square?
A) 6, B) 5, C) 3, D) 4, E) 7

(4) Let $f(x) = 5x + 8$. Compute $f^{-1}(x) = cx + d$. How much is $2c + 3d$?
A) $-\frac{23}{5}$, B) $-\frac{24}{5}$, C) $-\frac{22}{5}$, D) $-\frac{27}{5}$, E) $-\frac{26}{5}$

(5) Suppose that the dynamics of a two state stochastic system is generated by the matrix $\begin{pmatrix} \frac{2}{5} & \frac{7}{10} \\ \frac{3}{5} & \frac{3}{10} \end{pmatrix}$. Find the steady state probability vector $\begin{pmatrix} p_1 \\ p_2 \end{pmatrix}$. How much is p_1/p_2 ?
A) $\frac{19}{6}$, B) $\frac{11}{6}$, C) $\frac{13}{6}$, D) $\frac{7}{6}$, E) $\frac{17}{6}$

(6) One of the eigenvectors of the matrix $\begin{pmatrix} 2 & 4 \\ 4 & 2 \end{pmatrix}$ is $\begin{pmatrix} 1 \\ 1 \end{pmatrix}$. What is the correspondig eigenvalue?
A) 6, B) 7, C) 8, D) 4, E) 5

$_1{}^1$: $_2{}^1$: $_3{}^1$: $_4{}^1$: $_5{}^1$: $_6{}^1$:

(1) Suppose that the dynamics of a two state stochastic system is generated by the matrix $\begin{pmatrix} \frac{2}{5} & \frac{3}{5} \\ \frac{3}{5} & \frac{2}{5} \end{pmatrix}$. Find the steady state probability vector $\begin{pmatrix} p_1 \\ p_2 \end{pmatrix}$. How much is p_1/p_2 ?
A) 3, B) -1, C) 2, D) 1, E) 0

(2) Let $f(x) = 4x + 6$. Compute $f^{-1}(x) = cx + d$. How much is $2c + 3d$?
A) -6, B) -4, C) -3, D) -2, E) -5

(3) One of the eigenvectors of the matrix $\begin{pmatrix} 3 & 5 \\ 5 & 3 \end{pmatrix}$ is $\begin{pmatrix} 1 \\ 1 \end{pmatrix}$. What is the correspondig eigenvalue?
A) 10, B) 6, C) 7, D) 9, E) 8

(4) Let us take the following mapping $\phi : \begin{pmatrix} x \\ y \end{pmatrix} \to \begin{pmatrix} 1 & 2 \\ 3 & 4 \end{pmatrix} \begin{pmatrix} x \\ y \end{pmatrix}$. How much is the signed area of the image of the unit square?
A) -4, B) 0, C) -2, D) -3, E) -1

(5) Compute $\begin{pmatrix} a & b \\ c & d \end{pmatrix} = \begin{pmatrix} 1 & 0 \\ 1 & 3 \end{pmatrix}^{-1}$. How much is $a + 2b + 3c + 4d$?
A) $\frac{1}{3}$, B) $\frac{7}{3}$, C) $\frac{4}{3}$, D) $\frac{2}{3}$, E) $\frac{5}{3}$

(6) Let $f(x) = 2x - 5$ and $x_0 = 6$. Compute $f^{11}(x_0)$.
A) 2054, B) 2053, C) 2052, D) 2051, E) 2050

1^1: 2^1: 3^1: 4^1: 5^1: 6^1:

(1) One of the eigenvectors of the matrix $\begin{pmatrix} 4 & 8 \\ 8 & 4 \end{pmatrix}$ is $\begin{pmatrix} 1 \\ -1 \end{pmatrix}$. What is the corresponding eigenvalue?
A) -7, B) -5, C) -3, D) -6, E) -4

(2) Let $f(x) = 2x - 4$ and $x_0 = 5$. Compute $f^{11}(x_0)$.
A) 2050, B) 2052, C) 2049, D) 2051, E) 2053

(3) Compute $\begin{pmatrix} a & b \\ c & d \end{pmatrix} = \begin{pmatrix} 2 & 4 \\ 0 & 3 \end{pmatrix}^{-1}$. How much is $a + 2b + 3c + 4d$?
A) $-\frac{5}{2}$, B) $-\frac{3}{2}$, C) $-\frac{1}{2}$, D) $\frac{1}{2}$, E) $\frac{3}{2}$

(4) Let us take the following mapping $\phi : \begin{pmatrix} x \\ y \end{pmatrix} \to \begin{pmatrix} 3 & z \\ 2 & 3 \end{pmatrix} \begin{pmatrix} x \\ y \end{pmatrix}$. How much is z, if ϕ is not invertible?
A) $\frac{1}{2}$, B) $\frac{9}{2}$, C) $\frac{5}{2}$, D) $\frac{3}{2}$, E) $\frac{7}{2}$

(5) Let $f(x) = 4x + 6$. Compute $f^{-1}(x) = cx + d$. How much is $2c + 3d$?
A) -1, B) -4, C) -5, D) -2, E) -3

(6) One of the eigenvalues of the matrix $\begin{pmatrix} 4 & 3 \\ 0 & 6 \end{pmatrix}$ is 6. Compute the correspondig eigenvector $\begin{pmatrix} x \\ y \end{pmatrix}$. How much is x/y ?
A) $\frac{1}{4}$, B) $-\frac{3}{4}$, C) $-\frac{1}{4}$, D) $-\frac{5}{4}$, E) $-\frac{7}{4}$

1^1: 2^1: 3^1: 4^1: 5^1: 6^1:

(1) Let $f(x) = 2x - 5$ and $x_0 = 9$. Compute $f^{10}(x_0)$.
A) 4100, B) 4099, C) 4102, D) 4101, E) 4098

(2) Let us take the following mapping $\phi : \begin{pmatrix} x \\ y \end{pmatrix} \to \begin{pmatrix} 2 & z \\ 2 & 4 \end{pmatrix} \begin{pmatrix} x \\ y \end{pmatrix}$. How much is z, if ϕ is not invertible?
A) 5, B) 6, C) 8, D) 7, E) 4

(3) Suppose that the dynamics of a two state stochastic system is generated by the matrix $\begin{pmatrix} \frac{1}{5} & \frac{1}{2} \\ \frac{4}{5} & \frac{1}{2} \end{pmatrix}$. Find the steady state probability vector $\begin{pmatrix} p_1 \\ p_2 \end{pmatrix}$. How much is p_1/p_2 ?
A) $\frac{7}{8}$, B) $-\frac{1}{8}$, C) $\frac{3}{8}$, D) $\frac{5}{8}$, E) $\frac{1}{8}$

(4) Let $f(x) = 3x + 6$. Compute $f^{-1}(x) = cx + d$. How much is $2c + 3d$?
A) $-\frac{19}{3}$, B) $-\frac{17}{3}$, C) $-\frac{14}{3}$, D) $-\frac{13}{3}$, E) $-\frac{16}{3}$

(5) Compute $\begin{pmatrix} a & b \\ c & d \end{pmatrix} = \begin{pmatrix} 4 & 0 \\ 2 & 1 \end{pmatrix}^{-1}$. How much is $a + 2b + 3c + 4d$?
A) $\frac{11}{4}$, B) $\frac{7}{4}$, C) $\frac{5}{4}$, D) $\frac{13}{4}$, E) $\frac{9}{4}$

(6) One of the eigenvectors of the matrix $\begin{pmatrix} 2 & 3 \\ 3 & 2 \end{pmatrix}$ is $\begin{pmatrix} 1 \\ 1 \end{pmatrix}$. What is the correspondig eigenvalue?
A) 6, B) 7, C) 8, D) 9, E) 5

$_1{}^1$: $_2{}^1$: $_3{}^1$: $_4{}^1$: $_5{}^1$: $_6{}^1$:

(1) Let $f(x) = 4x + 6$. Compute $f^{-1}(x) = cx + d$. How much is $2c + 3d$?
A) -1, B) 0, C) -2, D) -3, E) -4

(2) Let us take the following mapping $\phi : \begin{pmatrix} x \\ y \end{pmatrix} \to \begin{pmatrix} 3 & 3 \\ 1 & 4 \end{pmatrix} \begin{pmatrix} x \\ y \end{pmatrix}$. How much is the signed area of the image of the unit square?
A) 10, B) 7, C) 11, D) 9, E) 8

(3) One of the eigenvalues of the matrix $\begin{pmatrix} 1 & 4 \\ 0 & 5 \end{pmatrix}$ is 5. Compute the correspondig eigenvector $\begin{pmatrix} x \\ y \end{pmatrix}$. How much is x/y ?
A) -5, B) -7, C) -3, D) -6, E) -4

(4) One of the eigenvectors of the matrix $\begin{pmatrix} 2 & 4 \\ 4 & 2 \end{pmatrix}$ is $\begin{pmatrix} 1 \\ 1 \end{pmatrix}$. What is the correspondig eigenvalue?
A) 7, B) 10, C) 6, D) 8, E) 9

(5) Compute $\begin{pmatrix} a & b \\ c & d \end{pmatrix} = \begin{pmatrix} 3 & 0 \\ 1 & 1 \end{pmatrix}^{-1}$. How much is $a + 2b + 3c + 4d$?
A) $\frac{16}{3}$, B) $\frac{10}{3}$, C) $\frac{14}{3}$, D) $\frac{11}{3}$, E) $\frac{13}{3}$

(6) Let $f(x) = 2x - 4$ and $x_0 = 7$. Compute $f^9(x_0)$.
A) 1540, B) 1536, C) 1539, D) 1538, E) 1537

$_1{}^1$: $_2{}^1$: $_3{}^1$: $_4{}^1$: $_5{}^1$: $_6{}^1$:

(1) One of the eigenvalues of the matrix $\begin{pmatrix} 4 & 2 \\ 0 & 5 \end{pmatrix}$ is 5. Compute the correspondig eigenvector $\begin{pmatrix} x \\ y \end{pmatrix}$. How much is x/y ?
A) $-\frac{3}{2}$, B) $\frac{1}{2}$, C) $-\frac{1}{2}$, D) $\frac{5}{2}$, E) $\frac{3}{2}$

(2) Compute $\begin{pmatrix} a & b \\ c & d \end{pmatrix} = \begin{pmatrix} 2 & 4 \\ 0 & 4 \end{pmatrix}^{-1}$. How much is $a+2b+3c+4d$?
A) $-\frac{7}{2}$, B) $\frac{1}{2}$, C) $-\frac{1}{2}$, D) $-\frac{5}{2}$, E) $-\frac{3}{2}$

(3) Let us take the following mapping $\phi : \begin{pmatrix} x \\ y \end{pmatrix} \to \begin{pmatrix} 1 & z \\ 3 & 2 \end{pmatrix} \begin{pmatrix} x \\ y \end{pmatrix}$. How much is z, if ϕ is not invertible?
A) $\frac{1}{3}$, B) $\frac{7}{3}$, C) $\frac{5}{3}$, D) $\frac{2}{3}$, E) $\frac{4}{3}$

(4) Let $f(x) = 2x - 5$ and $x_0 = 9$. Compute $f^9(x_0)$.
A) 2054, B) 2053, C) 2052, D) 2050, E) 2051

(5) Let $f(x) = 4x + 5$. Compute $f^{-1}(x) = cx + d$. How much is $2c + 3d$?
A) $-\frac{17}{4}$, B) $-\frac{11}{4}$, C) $-\frac{13}{4}$, D) $-\frac{19}{4}$, E) $-\frac{15}{4}$

(6) One of the eigenvectors of the matrix $\begin{pmatrix} 1 & 3 \\ 3 & 1 \end{pmatrix}$ is $\begin{pmatrix} 1 \\ -1 \end{pmatrix}$. What is the corresponding eigenvalue?
A) 2, B) 0, C) -1, D) -2, E) 1

1^1: 2^1: 3^1: 4^1: 5^1: 6^1:

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(1) Let $f(x) = 2x - 2$ and $x_0 = 3$. Compute $f^{11}(x_0)$.
A) 2052, B) 2051, C) 2048, D) 2049, E) 2050

(2) Let $f(x) = 5x + 8$. Compute $f^{-1}(x) = cx + d$. How much is $2c + 3d$?
A) $-\frac{17}{5}$, B) $-\frac{18}{5}$, C) $-\frac{21}{5}$, D) $-\frac{22}{5}$, E) $-\frac{19}{5}$

(3) Compute $\begin{pmatrix} a & b \\ c & d \end{pmatrix} = \begin{pmatrix} 4 & 2 \\ 0 & 4 \end{pmatrix}^{-1}$. How much is $a + 2b + 3c + 4d$?
A) -1, B) 0, C) 2, D) 3, E) 1

(4) Let us take the following mapping $\phi : \begin{pmatrix} x \\ y \end{pmatrix} \to \begin{pmatrix} 1 & 3 \\ z & 3 \end{pmatrix} \begin{pmatrix} x \\ y \end{pmatrix}$. How much is z, if ϕ is not invertible?
A) 4, B) 5, C) 2, D) 1, E) 3

(5) Suppose that the dynamics of a two state stochastic system is generated by the matrix $\begin{pmatrix} \frac{3}{10} & \frac{9}{10} \\ \frac{7}{10} & \frac{1}{10} \end{pmatrix}$. Find the steady state probability vector $\begin{pmatrix} p_1 \\ p_2 \end{pmatrix}$. How much is p_1/p_2 ?
A) $\frac{12}{7}$, B) $\frac{10}{7}$, C) $\frac{8}{7}$, D) $\frac{9}{7}$, E) $\frac{11}{7}$

(6) One of the eigenvectors of the matrix $\begin{pmatrix} 1 & 2 \\ 2 & 1 \end{pmatrix}$ is $\begin{pmatrix} 1 \\ 1 \end{pmatrix}$. What is the correspondig eigenvalue?
A) 2, B) 0, C) 4, D) 1, E) 3

$_1{}^1$: $_2{}^1$: $_3{}^1$: $_4{}^1$: $_5{}^1$: $_6{}^1$:

(1) Let us take the following mapping $\phi : \begin{pmatrix} x \\ y \end{pmatrix} \to \begin{pmatrix} 4 & 1 \\ 2 & 4 \end{pmatrix} \begin{pmatrix} x \\ y \end{pmatrix}$. How much is the signed area of the image of the unit square?
A) 15, B) 13, C) 11, D) 12, E) 14

(2) One of the eigenvectors of the matrix $\begin{pmatrix} 2 & 6 \\ 6 & 2 \end{pmatrix}$ is $\begin{pmatrix} 1 \\ 1 \end{pmatrix}$. What is the correspondig eigenvalue?
A) 9, B) 11, C) 7, D) 8, E) 10

(3) Let $f(x) = 2x - 4$ and $x_0 = 6$. Compute $f^{10}(x_0)$.
A) 2052, B) 2054, C) 2051, D) 2050, E) 2053

(4) Let $f(x) = 3x + 4$. Compute $f^{-1}(x) = cx + d$. How much is $2c + 3d$?
A) $-\frac{10}{3}$, B) $-\frac{13}{3}$, C) $-\frac{7}{3}$, D) $-\frac{8}{3}$, E) $-\frac{11}{3}$

(5) Compute $\begin{pmatrix} a & b \\ c & d \end{pmatrix} = \begin{pmatrix} 4 & 0 \\ 4 & 3 \end{pmatrix}^{-1}$. How much is $a + 2b + 3c + 4d$?
A) $\frac{11}{12}$, B) $\frac{7}{12}$, C) $\frac{5}{12}$, D) $\frac{17}{12}$, E) $\frac{13}{12}$

(6) Suppose that the dynamics of a two state stochastic system is generated by the matrix $\begin{pmatrix} \frac{1}{10} & \frac{1}{2} \\ \frac{9}{10} & \frac{1}{2} \end{pmatrix}$. Find the steady state probability vector $\begin{pmatrix} p_1 \\ p_2 \end{pmatrix}$. How much is p_1/p_2 ?
A) $-\frac{1}{9}$, B) $\frac{5}{9}$, C) $\frac{4}{9}$, D) $\frac{1}{9}$, E) $\frac{2}{9}$

$_1$1: $_2$1: $_3$1: $_4$1: $_5$1: $_6$1:

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(1) One of the eigenvalues of the matrix $\begin{pmatrix} 4 & 1 \\ 0 & 6 \end{pmatrix}$ is 6. Compute the correspondig eigenvector $\begin{pmatrix} x \\ y \end{pmatrix}$. How much is x/y ?
A) $\frac{5}{4}$, B) $\frac{1}{4}$, C) $-\frac{1}{4}$, D) $-\frac{3}{4}$, E) $\frac{3}{4}$

(2) One of the eigenvectors of the matrix $\begin{pmatrix} 3 & 5 \\ 5 & 3 \end{pmatrix}$ is $\begin{pmatrix} 1 \\ 1 \end{pmatrix}$. What is the correspondig eigenvalue?
A) 5, B) 9, C) 8, D) 7, E) 6

(3) Compute $\begin{pmatrix} a & b \\ c & d \end{pmatrix} = \begin{pmatrix} 3 & 0 \\ 3 & 3 \end{pmatrix}^{-1}$. How much is $a + 2b + 3c + 4d$?
A) $\frac{2}{3}$, B) $-\frac{4}{3}$, C) $-\frac{1}{3}$, D) $\frac{1}{3}$, E) $-\frac{2}{3}$

(4) Let us take the following mapping $\phi : \begin{pmatrix} x \\ y \end{pmatrix} \to \begin{pmatrix} 4 & 2 \\ z & 4 \end{pmatrix} \begin{pmatrix} x \\ y \end{pmatrix}$. How much is z, if ϕ is not invertible?
A) 10, B) 6, C) 9, D) 8, E) 7

(5) Let $f(x) = 3x + 7$. Compute $f^{-1}(x) = cx + d$. How much is $2c + 3d$?
A) $-\frac{19}{3}$, B) $-\frac{20}{3}$, C) $-\frac{17}{3}$, D) $-\frac{16}{3}$, E) $-\frac{14}{3}$

(6) Let $f(x) = 2x - 5$ and $x_0 = 9$. Compute $f^{10}(x_0)$.
A) 4103, B) 4101, C) 4100, D) 4102, E) 4099

$_1{}^1$: $_2{}^1$: $_3{}^1$: $_4{}^1$: $_5{}^1$: $_6{}^1$:

(1) Let us take the following mapping $\phi : \begin{pmatrix} x \\ y \end{pmatrix} \to \begin{pmatrix} 4 & 4 \\ z & 4 \end{pmatrix} \begin{pmatrix} x \\ y \end{pmatrix}$. How much is z, if ϕ is not invertible?
A) 4, B) 5, C) 7, D) 6, E) 3

(2) Let $f(x) = 5x + 8$. Compute $f^{-1}(x) = cx + d$. How much is $2c + 3d$?
A) $-\frac{22}{5}$, B) $-\frac{21}{5}$, C) $-\frac{17}{5}$, D) $-\frac{18}{5}$, E) $-\frac{19}{5}$

(3) One of the eigenvalues of the matrix $\begin{pmatrix} 4 & 2 \\ 0 & 6 \end{pmatrix}$ is 6. Compute the correspondig eigenvector $\begin{pmatrix} x \\ y \end{pmatrix}$. How much is x/y ?
A) $\frac{1}{2}$, B) $-\frac{1}{2}$, C) $\frac{5}{2}$, D) $-\frac{3}{2}$, E) $\frac{3}{2}$

(4) One of the eigenvectors of the matrix $\begin{pmatrix} 3 & 7 \\ 7 & 3 \end{pmatrix}$ is $\begin{pmatrix} 1 \\ -1 \end{pmatrix}$. What is the corresponding eigenvalue?
A) -5, B) -7, C) -4, D) -6, E) -8

(5) Let $f(x) = 2x - 3$ and $x_0 = 6$. Compute $f^9(x_0)$.
A) 1540, B) 1539, C) 1541, D) 1542, E) 1543

(6) Compute $\begin{pmatrix} a & b \\ c & d \end{pmatrix} = \begin{pmatrix} 2 & 0 \\ 4 & 4 \end{pmatrix}^{-1}$. How much is $a + 2b + 3c + 4d$?
A) 3, B) 2, C) 4, D) 1, E) 0

$_1^1$: $_2^1$: $_3^1$: $_4^1$: $_5^1$: $_6^1$:

(1) One of the eigenvalues of the matrix $\begin{pmatrix} 3 & 2 \\ 0 & 7 \end{pmatrix}$ is 7. Compute the correspondig eigenvector $\begin{pmatrix} x \\ y \end{pmatrix}$. How much is x/y ?
A) $-\frac{7}{3}$, B) $-\frac{2}{3}$, C) $-\frac{4}{3}$, D) $-\frac{5}{3}$, E) $-\frac{1}{3}$

(2) Compute $\begin{pmatrix} a & b \\ c & d \end{pmatrix} = \begin{pmatrix} 4 & 1 \\ 0 & 4 \end{pmatrix}^{-1}$. How much is $a + 2b + 3c + 4d$?
A) $\frac{9}{8}$, B) $\frac{3}{8}$, C) $\frac{7}{8}$, D) $\frac{1}{8}$, E) $\frac{5}{8}$

(3) Let $f(x) = 5x + 6$. Compute $f^{-1}(x) = cx + d$. How much is $2c + 3d$?
A) $-\frac{17}{5}$, B) $-\frac{16}{5}$, C) $-\frac{18}{5}$, D) $-\frac{21}{5}$, E) $-\frac{19}{5}$

(4) One of the eigenvectors of the matrix $\begin{pmatrix} 4 & 8 \\ 8 & 4 \end{pmatrix}$ is $\begin{pmatrix} 1 \\ -1 \end{pmatrix}$. What is the corresponding eigenvalue?
A) -8, B) -5, C) -6, D) -7, E) -4

(5) Let us take the following mapping $\phi : \begin{pmatrix} x \\ y \end{pmatrix} \to \begin{pmatrix} 2 & 1 \\ z & 4 \end{pmatrix} \begin{pmatrix} x \\ y \end{pmatrix}$. How much is z, if ϕ is not invertible?
A) 10, B) 9, C) 8, D) 7, E) 11

(6) Let $f(x) = 2x - 2$ and $x_0 = 3$. Compute $f^{11}(x_0)$.
A) 2050, B) 2051, C) 2053, D) 2054, E) 2052

$_1{}^1$: $_2{}^1$: $_3{}^1$: $_4{}^1$: $_5{}^1$: $_6{}^1$:

1	1: A^1,	2: B^1,	3: B^1,	4: D^1,	5: B^1,	6: C^1,
2	1: E^1,	2: A^1,	3: B^1,	4: A^1,	5: C^1,	6: C^1,
3	1: B^1,	2: A^1,	3: A^1,	4: E^1,	5: C^1,	6: A^1,
4	1: D^1,	2: C^1,	3: A^1,	4: B^1,	5: D^1,	6: D^1,
5	1: E^1,	2: C^1,	3: C^1,	4: A^1,	5: D^1,	6: D^1,
6	1: E^1,	2: B^1,	3: C^1,	4: B^1,	5: B^1,	6: E^1,
7	1: B^1,	2: E^1,	3: D^1,	4: E^1,	5: C^1,	6: E^1,
8	1: A^1,	2: D^1,	3: D^1,	4: B^1,	5: E^1,	6: D^1,
9	1: C^1,	2: D^1,	3: B^1,	4: B^1,	5: E^1,	6: E^1,
10	1: D^1,	2: A^1,	3: B^1,	4: A^1,	5: E^1,	6: B^1,
11	1: B^1,	2: B^1,	3: E^1,	4: D^1,	5: D^1,	6: D^1,
12	1: A^1,	2: D^1,	3: B^1,	4: C^1,	5: D^1,	6: A^1,
13	1: D^1,	2: B^1,	3: C^1,	4: A^1,	5: A^1,	6: C^1,
14	1: C^1,	2: E^1,	3: C^1,	4: E^1,	5: B^1,	6: E^1,
15	1: C^1,	2: E^1,	3: C^1,	4: C^1,	5: D^1,	6: A^1,
16	1: D^1,	2: B^1,	3: E^1,	4: C^1,	5: C^1,	6: B^1,
17	1: E^1,	2: B^1,	3: D^1,	4: B^1,	5: B^1,	6: B^1,
18	1: D^1,	2: E^1,	3: D^1,	4: E^1,	5: A^1,	6: E^1,
19	1: E^1,	2: D^1,	3: E^1,	4: C^1,	5: B^1,	6: A^1,
20	1: C^1,	2: B^1,	3: D^1,	4: B^1,	5: C^1,	6: D^1,
21	1: E^1,	2: D^1,	3: E^1,	4: D^1,	5: D^1,	6: E^1,
22	1: E^1,	2: D^1,	3: A^1,	4: A^1,	5: B^1,	6: B^1,
23	1: C^1,	2: C^1,	3: A^1,	4: D^1,	5: A^1,	6: B^1,
24	1: A^1,	2: A^1,	3: B^1,	4: C^1,	5: B^1,	6: E^1,
25	1: B^1,	2: A^1,	3: B^1,	4: E^1,	5: C^1,	6: A^1,