0.1. **No.1.**

(1) Mennyi $\int \frac{1}{x^2} + \frac{1}{2x^4} + \sqrt[3]{(4x)^5}\,dx$?

    A) $3\sqrt[3]{2}x^{8/3} - \frac{1}{48x^3} - \frac{1}{3x}$, B) $12\sqrt[3]{2}x^{8/3} - \frac{1}{48x^3} - \frac{1}{x}$, C) $3\sqrt[3]{2}x^{8/3} + \frac{1}{48x^3} + \frac{1}{x}$, D) $3\sqrt[3]{2}x^{8/3} - \frac{1}{6x^3} - \frac{1}{x}$, E) $3\sqrt[3]{2}x^{8/3} - \frac{1}{24x^3} - \frac{1}{x}$

(2) Mennyi $\int \frac{4}{3^2+4^2x} + \sin(4x) + e^{-4x}\,dx$?

    A) $-e^{-4x} - \frac{1}{4}\cos(4x) + \frac{1}{3}\tan^{-1}\left(\frac{4x}{3}\right)$

    B) $-\frac{e^{-4x}}{4} + \frac{1}{4}\cos(4x) + \frac{1}{3}\tan^{-1}\left(\frac{4x}{3}\right)$

    C) $-\frac{e^{-4x}}{4} - \frac{1}{4}\cos(4x) + \frac{1}{3}\tan^{-1}\left(\frac{4x}{3}\right)$

    D) $-\frac{e^{-4x}}{4} - \frac{1}{4}\cos(4x) + \frac{1}{4}\tan^{-1}\left(\frac{4x}{3}\right)$

    E) $-\frac{e^{-4x}}{4} - \frac{1}{4}\sin(4x) + \frac{4}{3}\tan^{-1}\left(\frac{4x}{3}\right)$

(3) Mennyi $\int (5+4x)\sin(5x)\,dx$?

    A) $\frac{4}{125}\sin(5x) - \frac{4}{25}x\cos(5x) - \frac{1}{5}\cos(5x)$

    B) $-\frac{4}{25}\sin(5x) + \frac{4}{5}x\cos(5x) - \cos(5x)$

    C) $\frac{4}{25}\sin(5x) - \frac{4}{5}x\cos(5x) - \cos(5x)$

    D) $\frac{1}{25}\sin(5x) - \frac{1}{5}x\cos(5x) - \cos(5x)$

    E) $\frac{4}{5}x\sin(5x) - \frac{21}{25}\cos(5x)$

(4) Mennyi $\int x^5 \log(3x)\,dx$?

    A) $\frac{1}{5}x^5\log(3x) - \frac{x^5}{25}$, B) $\frac{1}{7}x^7\log(3x) - \frac{x^7}{49}$, C) $\frac{1}{6}x^6\log(3x) - \frac{x^6}{36}$, D) $\frac{1}{2}x^6\log(3x) - \frac{x^6}{12}$, E) $\frac{1}{6}x^6\log(x) - \frac{x^6}{36}$

(5) Mennyi $\int x^3 \cos(5x^4)\,dx$?

    A) $\frac{1}{15}\sin\left(5x^3\right)$, B) $\frac{3\sin\left(x^4\right)}{4}$, C) $\frac{1}{15}x\sin(5x) + \frac{1}{75}\cos(5x)$, D) $\frac{1}{20}\sin\left(5x^4\right)$, E) $\frac{1}{5}x\sin(5x) + \frac{1}{25}\cos(5x)$

(6) Mennyi $\int x^5 \sin(2x^6)\,dx$?

    A) $-\frac{1}{6}\cos\left(x^6\right)$

    B) $-\frac{1}{12}\cos\left(2x^6\right)$

    C) $-\frac{1}{10}\cos\left(2x^5\right)$

    D) 13.2

    E) $\frac{1}{4}\sin(2x) - \frac{1}{2}x\cos(2x)$

(7) Mennyi $\int \frac{4x+4}{1+1x^2}\,dx$?

    A) 13.2

    B) $2\log\left(x^2+1\right) + 4\tan^{-1}(x)$

    C) $-4\log(x-1)$

    D) 17.3

    E) $2\log\left(x^2+1\right) - 4\tan^{-1}(x)$

(8) Mennyi $\int_{-2}^{0} f(x)\,dx$, ha $f(x) = \begin{cases} 4 & \text{if } x < 0 \\ 1+4x & \text{if } x > 0. \end{cases}$?

    A) 3, B) 6, C) 5, D) 7, E) 8

(9) Mennyi $\int_{-3}^{-1} f(x)\,dx$, ha $f(x) = \begin{cases} 2+3x & \text{if } x < 0 \\ 3 & \text{if } x > 0. \end{cases}$?

    A) -10, B) -12, C) -11, D) -8, E) -13

(10) $y' = 2x^2 + 1x + 2$, $y(4) = 2$. Mennyi $y(5)$?

    A) $\frac{241}{6}$, B) $\frac{295}{6}$, C) $\frac{235}{6}$, D) $\frac{259}{6}$, E) $\frac{247}{6}$

(11) Keresd meg az $f(x) = x^2 - 14x + 41$ es az $g(x) = 1x + 1$ fuggvenyek altal bezart teruletet!

    A) $\frac{7}{2}$, B) $\frac{11}{2}$, C) $\frac{1}{2}$, D) $\frac{5}{2}$, E) $\frac{9}{2}$

(12) $y'' = 3x + 1$, $y(3) = 4$, $y'(3) = 1$. Mennyi $y(4)$?

    A) $\frac{17}{2}$, B) $\frac{1}{2}$, C) $\frac{11}{2}$, D) $\frac{13}{2}$, E) $\frac{21}{2}$

(13) Szamold ki az $r(t) = (3t^2 + 1, 4t^2)$ $t \in [4, 8]$ gorbe ivhosszat!

    A) $\frac{1}{6}\left(265\sqrt{265} - 73\sqrt{73}\right)$, B) $\frac{1}{4}\left(265\sqrt{265} - 73\sqrt{73}\right)$, C) $\frac{1}{12}\left(265\sqrt{265} - 73\sqrt{73}\right)$, D) $\frac{5}{12}\left(265\sqrt{265} - 73\sqrt{73}\right)$, E) $\frac{1}{3}\left(265\sqrt{265} - 73\sqrt{73}\right)$

(14) Szamold ki az $f(x) = 2x + 2$, $x \in [5, 9]$ fuggveny ivhosszat!

    A) $8\sqrt{5}$, B) $4\sqrt{5}$, C) $6\sqrt{5}$, D) $10\sqrt{5}$, E) $2\sqrt{5}$

(15) Szamold ki az $f(x) = 2x + 3$, $x \in [4, 5]$ fuggveny x tengely koruli megforgatasaval keletkezett forgastest feluletet!

    A) $\frac{80\sqrt{5}\pi}{3}$, B) $80\sqrt{5}\pi$, C) $\frac{400\sqrt{5}\pi}{3}$, D) $\frac{320\sqrt{5}\pi}{3}$, E) $\frac{160\sqrt{5}\pi}{3}$

(16) Szamold ki az $f(x) = 5x + 5$, $x \in [4,5]$ fuggveny x tengely koruli megforgatasaval keletkezett forgastest terfogatat!

A) $\frac{26875\pi}{9}$, B) $\frac{5375\pi}{9}$, C) $\frac{10750\pi}{9}$, D) $\frac{21500\pi}{9}$, E) $\frac{5375\pi}{3}$

(17) Szamold ki az $f(x) = 3x^2$, $x \in [3,4]$ fuggveny x tengely koruli megforgatasaval keletkezett forgastest terfogatat!

A) $\frac{12288\pi}{5}$, B) 3072π, C) $\frac{3072\pi}{5}$, D) $\frac{9216\pi}{5}$, E) $\frac{6144\pi}{5}$

1^2:   , 2^2:   , 3^2:   , 4^2:   , 5^2:   , 6^2:   , 7^2:   , 8^2:   , 9^2:   , 10^2:   , 11^2:   , 12^2:
, 13^2:   , 14^2:   , 15^2:   , 16^2:   , 17^2:   ,

0.2. **No.2.**

(1) Mennyi $\int \frac{1}{x^2} + \frac{1}{3x^3} + \sqrt[3]{(2x)^3}\, dx$?

   A) $x^2 + \frac{1}{54x^2} + \frac{1}{x}$, B) $x^2 - \frac{1}{18x^2} - \frac{1}{x}$, C) $x^2 - \frac{1}{54x^2} - \frac{1}{3x}$, D) $x^2 - \frac{1}{6x^2} - \frac{1}{x}$, E) $2x^2 - \frac{1}{54x^2} - \frac{1}{x}$

(2) Mennyi $\int \frac{2}{2^2+3^2x} + \sin(2x) + e^{-3x}\, dx$?

   A) $-\frac{e^{-3x}}{3} + \frac{1}{2}\cos(2x) + \frac{1}{3}\tan^{-1}\left(\frac{3x}{2}\right)$
   B) $-\frac{e^{-3x}}{3} - \frac{1}{2}\cos(2x) + \frac{2}{9}\tan^{-1}\left(\frac{3x}{2}\right)$
   C) $-\frac{e^{-3x}}{3} - \frac{1}{2}\cos(2x) + \frac{1}{3}\tan^{-1}\left(\frac{3x}{2}\right)$
   D) $-\frac{e^{-3x}}{3} - \frac{1}{2}\sin(2x) + \tan^{-1}\left(\frac{3x}{2}\right)$
   E) $-e^{-3x} - \frac{1}{2}\cos(2x) + \frac{1}{3}\tan^{-1}\left(\frac{3x}{2}\right)$

(3) Mennyi $\int (3+5x)\sin(4x)\, dx$?

   A) $\frac{5}{16}\sin(4x) - \frac{5}{4}x\cos(4x) - \frac{3}{4}\cos(4x)$
   B) $\frac{1}{16}\sin(4x) - \frac{1}{4}x\cos(4x) - \frac{3}{4}\cos(4x)$
   C) $-\frac{5}{16}\sin(4x) + \frac{5}{4}x\cos(4x) - \frac{3}{4}\cos(4x)$
   D) $\frac{5}{4}x\sin(4x) - \frac{7}{16}\cos(4x)$
   E) $\frac{5}{64}\sin(4x) - \frac{5}{16}x\cos(4x) - \frac{3}{16}\cos(4x)$

(4) Mennyi $\int x^5 \log(3x)\, dx$?

   A) $\frac{1}{2}x^6\log(3x) - \frac{x^6}{12}$, B) $\frac{1}{7}x^7\log(3x) - \frac{x^7}{49}$, C) $\frac{1}{6}x^6\log(x) - \frac{x^6}{36}$, D) $\frac{1}{6}x^6\log(3x) - \frac{x^6}{36}$, E) $\frac{1}{5}x^5\log(3x) - \frac{x^5}{25}$

(5) Mennyi $\int x^2 \cos(5x^3)\, dx$?

   A) $\frac{1}{5}x\sin(5x) + \frac{1}{25}\cos(5x)$, B) $\frac{2\sin(x^3)}{3}$, C) $\frac{1}{10}x\sin(5x) + \frac{1}{50}\cos(5x)$, D) $\frac{1}{15}\sin(5x^3)$, E) $\frac{1}{10}\sin(5x^2)$

(6) Mennyi $\int x^4 \sin(5x^5)\, dx$?

   A) $\frac{1}{25}\sin(5x) - \frac{1}{5}x\cos(5x)$
   B) $-\frac{1}{20}\cos(5x^4)$
   C) $-\frac{1}{25}\cos(5x^5)$
   D) $-\frac{1}{5}\cos(x^5)$
   E) 13.2

(7) Mennyi $\int \frac{2x+5}{1+1x^2}\, dx$?

   A) $\log(x^2+1) - 5\tan^{-1}(x)$
   B) 13.2
   C) 17.3
   D) $\log(x^2+1) + 5\tan^{-1}(x)$
   E) $\frac{3}{2}\log(-5(x+1)) - \frac{7}{2}\log(5(x-1))$

(8) Mennyi $\int_{-3}^{4} f(x)\, dx$, ha $f(x) = \begin{cases} 5 & \text{if } x < 0 \\ 2+3x & \text{if } x > 0. \end{cases}$?

   A) 44, B) 42, C) 46, D) 43, E) 47

(9) Mennyi $\int_{-3}^{3} f(x)\, dx$, ha $f(x) = \begin{cases} 2+2x & \text{if } x < 0 \\ 3 & \text{if } x > 0. \end{cases}$?

   A) 2, B) 1, C) 6, D) 3, E) 4

(10) $y' = 1x^2 + 3x + 5$, $y(2) = 5$. Mennyi $y(3)$?

   A) $\frac{89}{6}$, B) $\frac{83}{6}$, C) $\frac{95}{6}$, D) $\frac{143}{6}$, E) $\frac{107}{6}$

(11) Keresd meg az $f(x) = x^2 - 12x + 27$ es az $g(x) = 2x + 3$ fuggvenyek altal bezart teruletet!

   A) $\frac{7}{3}$, B) $\frac{13}{3}$, C) $\frac{14}{3}$, D) $\frac{4}{3}$, E) $\frac{11}{3}$

(12) $y'' = 5x + 4$, $y(4) = 3$, $y'(4) = 1$. Mennyi $y(5)$?

   A) $\frac{71}{6}$, B) $\frac{41}{6}$, C) $\frac{101}{6}$, D) $\frac{65}{6}$, E) $\frac{53}{6}$

(13) Szamold ki az $r(t) = (4t^2 + 2, 5t^2)$ $t \in [5,7]$ gorbe ivhosszat!

   A) $\frac{2}{75}\left(1289\sqrt{1289} - 689\sqrt{689}\right)$, B) $\frac{1}{30}\left(1289\sqrt{1289} - 689\sqrt{689}\right)$, C) $\frac{1}{50}\left(1289\sqrt{1289} - 689\sqrt{689}\right)$, D) $\frac{1}{75}\left(1289\sqrt{1289} - 689\sqrt{689}\right)$,
   E) $\frac{1}{150}\left(1289\sqrt{1289} - 689\sqrt{689}\right)$

(14) Szamold ki az $f(x) = 5x + 4$, $x \in [4,6]$ fuggveny ivhosszat!

   A) $\sqrt{26}$, B) $4\sqrt{26}$, C) $3\sqrt{26}$, D) $2\sqrt{26}$, E) $5\sqrt{26}$

(15) Szamold ki az $f(x) = 5x + 3$, $x \in [2,3]$ fuggveny x tengely koruli megforgatasaval keletkezett forgastest feluletet!

   A) $84\sqrt{26}\pi$, B) $105\sqrt{26}\pi$, C) $21\sqrt{26}\pi$, D) $63\sqrt{26}\pi$, E) $42\sqrt{26}\pi$

(16) Szamold ki az $f(x) = 2x + 2$, $x \in [3, 4]$ fuggveny x tengely koruli megforgatasaval keletkezett forgastest terfogatat!

A) $\frac{1984\pi}{9}$, B) $\frac{2480\pi}{9}$, C) $\frac{496\pi}{9}$, D) $\frac{992\pi}{9}$, E) $\frac{496\pi}{3}$

(17) Szamold ki az $f(x) = 4x^2$, $x \in [2, 3]$ fuggveny x tengely koruli megforgatasaval keletkezett forgastest terfogatat!

A) 1296π, B) $\frac{3888\pi}{5}$, C) $\frac{1296\pi}{5}$, D) $\frac{2592\pi}{5}$, E) $\frac{5184\pi}{5}$

1^2:   , 2^2:   , 3^2:   , 4^2:   , 5^2:   , 6^2:   , 7^2:   , 8^2:   , 9^2:   , 10^2:   , 11^2:   , 12^2:
, 13^2:   , 14^2:   , 15^2:   , 16^2:   , 17^2:   ,

0.3. **No.3.**

(1) Mennyi $\int \frac{1}{x^2} + \frac{1}{4x^5} + \sqrt[5]{(4x)^3}\, dx$?

A) $\frac{5x^{8/5}}{2 \cdot 2^{4/5}} - \frac{1}{1024x^4} - \frac{1}{x}$, B) $\frac{5x^{8/5}}{2 \cdot 2^{4/5}} + \frac{1}{4096x^4} + \frac{1}{x}$, C) $\frac{5x^{8/5}}{2 \cdot 2^{4/5}} - \frac{1}{16x^4} - \frac{1}{x}$, D) $5\sqrt[5]{2}x^{8/5} - \frac{1}{4096x^4} - \frac{1}{x}$, E) $\frac{5x^{8/5}}{2 \cdot 2^{4/5}} - \frac{1}{4096x^4} - \frac{1}{3x}$

(2) Mennyi $\int \frac{5}{2^2+2^2 x} + \sin(5x) + e^{-3x}\, dx$?

A) $-\frac{e^{-3x}}{3} + \frac{1}{5}\cos(5x) + \frac{5}{4}\tan^{-1}(x)$

B) $-\frac{e^{-3x}}{3} - \frac{1}{5}\sin(5x) + \frac{5}{2}\tan^{-1}(x)$

C) $-\frac{e^{-3x}}{3} - \frac{1}{5}\cos(5x) + \frac{5}{4}\tan^{-1}(x)$

D) $-e^{-3x} - \frac{1}{5}\cos(5x) + \frac{5}{4}\tan^{-1}(x)$

E) 13.2

(3) Mennyi $\int (3+5x)\sin(5x)\, dx$?

A) $\frac{1}{25}\sin(5x) - \frac{1}{5}x\cos(5x) - \frac{3}{5}\cos(5x)$

B) $\frac{1}{5}\sin(5x) - x\cos(5x) - \frac{3}{5}\cos(5x)$

C) $\frac{1}{25}\sin(5x) - \frac{1}{5}x\cos(5x) - \frac{3}{25}\cos(5x)$

D) $x\sin(5x) - \frac{2}{5}\cos(5x)$

E) $-\frac{1}{5}\sin(5x) + x\cos(5x) - \frac{3}{5}\cos(5x)$

(4) Mennyi $\int x^2 \log(2x)\, dx$?

A) $\frac{1}{3}x^3\log(2x) - \frac{x^3}{9}$, B) $\frac{1}{4}x^4\log(2x) - \frac{x^4}{16}$, C) $\frac{1}{2}x^2\log(2x) - \frac{x^2}{4}$, D) $\frac{1}{3}x^3\log(x) - \frac{x^3}{9}$, E) $\frac{2}{3}x^3\log(2x) - \frac{2x^3}{9}$

(5) Mennyi $\int x^2 \cos(3x^3)\, dx$?

A) $\frac{1}{9}\sin\left(3x^3\right)$, B) $\frac{1}{6}\sin\left(3x^2\right)$, C) $\frac{1}{3}x\sin(3x) + \frac{1}{9}\cos(3x)$, D) $\frac{1}{6}x\sin(3x) + \frac{1}{18}\cos(3x)$, E) $\frac{2\sin\left(x^3\right)}{3}$

(6) Mennyi $\int x^2 \sin(5x^3)\, dx$?

A) 13.2

B) $-\frac{1}{3}\cos\left(x^3\right)$

C) $-\frac{1}{15}\cos\left(5x^3\right)$

D) $\frac{1}{25}\sin(5x) - \frac{1}{5}x\cos(5x)$

E) $-\frac{1}{10}\cos\left(5x^2\right)$

(7) Mennyi $\int \frac{5x+4}{1+9x^2}\, dx$?

A) $\frac{5}{2}\log\left(9x^2+1\right) + 12\tan^{-1}(3x)$

B) $\frac{5}{18}\log\left(9x^2+1\right) - \frac{4}{3}\tan^{-1}(3x)$

C) $\frac{5}{18}\log\left(9x^2+1\right) + \frac{4}{3}\tan^{-1}(3x)$

D) $\frac{7}{18}\log(-4(3x+1)) - \frac{17}{18}\log(4(3x-1))$

E) $\frac{7}{2}\log(-4(3x+1)) - \frac{17}{2}\log(4(3x-1))$

(8) Mennyi $\int_{-4}^{-3} f(x)\, dx$, ha $f(x) = \begin{cases} 4 & \text{if } x < 0 \\ 2+1x & \text{if } x > 0. \end{cases}$?

A) 0, B) -1, C) 4, D) 1, E) 2

(9) Mennyi $\int_{-4}^{3} f(x)\, dx$, ha $f(x) = \begin{cases} 1+3x & \text{if } x < 0 \\ 3 & \text{if } x > 0. \end{cases}$?

A) -14, B) -16, C) -15, D) -11, E) -13

(10) $y' = 2x^2 + 4x + 5$, $y(1) = 2$. Mennyi $y(2)$?

A) $\frac{41}{3}$, B) $\frac{29}{3}$, C) $\frac{38}{3}$, D) $\frac{32}{3}$, E) $\frac{53}{3}$

(11) Keresd meg az $f(x) = x^2 - 10x + 15$ es az $g(x) = 2x + 3$ fuggvenyek altal bezart teruletet!

A) $\frac{8}{3}$, B) $\frac{32}{3}$, C) $\frac{11}{3}$, D) $\frac{2}{3}$, E) $\frac{5}{3}$

(12) $y'' = 2x + 1$, $y(4) = 2$, $y'(4) = 3$. Mennyi $y(5)$?

A) $\frac{59}{6}$, B) $-\frac{1}{6}$, C) $\frac{11}{6}$, D) $\frac{29}{6}$, E) $\frac{23}{6}$

(13) Szamold ki az $r(t) = (3t^2 + 5, 4t^2)$ $t \in [4,8]$ gorbe ivhosszat!

A) $\frac{5}{12}\left(265\sqrt{265} - 73\sqrt{73}\right)$, B) $\frac{1}{6}\left(265\sqrt{265} - 73\sqrt{73}\right)$, C) $\frac{1}{4}\left(265\sqrt{265} - 73\sqrt{73}\right)$, D) $\frac{1}{3}\left(265\sqrt{265} - 73\sqrt{73}\right)$, E) $\frac{1}{12}\left(265\sqrt{265} - 73\sqrt{73}\right)$

(14) Szamold ki az $f(x) = 2x + 5$, $x \in [2,5]$ fuggveny ivhosszat!

A) $\frac{3\sqrt{5}}{2}$, B) $6\sqrt{5}$, C) $\frac{9\sqrt{5}}{2}$, D) $3\sqrt{5}$, E) $\frac{15\sqrt{5}}{2}$

(15) Szamold ki az $f(x) = 4x + 1$, $x \in [2,3]$ fuggveny x tengely koruli megforgatasaval keletkezett forgastest feluletet!

A) $56\sqrt{17}\pi$, B) $42\sqrt{17}\pi$, C) $70\sqrt{17}\pi$, D) $28\sqrt{17}\pi$, E) $14\sqrt{17}\pi$

(16) Szamold ki az $f(x) = 4x + 4$, $x \in [5, 6]$ fuggveny x tengely koruli megforgatasaval keletkezett forgastest terfogatat!

    A) 1824π, B) 2432π, C) 608π, D) 1216π, E) 3040π

(17) Szamold ki az $f(x) = 4x^2$, $x \in [3, 4]$ fuggveny x tengely koruli megforgatasaval keletkezett forgastest terfogatat!

    A) $\frac{16384\pi}{3}$, B) $\frac{16384\pi}{5}$, C) $\frac{65536\pi}{15}$, D) $\frac{32768\pi}{15}$, E) $\frac{16384\pi}{15}$

1^2: , 2^2: , 3^2: , 4^2: , 5^2: , 6^2: , 7^2: , 8^2: , 9^2: , 10^2: , 11^2: , 12^2: , 13^2: , 14^2: , 15^2: , 16^2: , 17^2: ,

0.4. No.4.

(1) Mennyi $\int \frac{1}{x^2} + \frac{1}{4x^3} + \sqrt[3]{(5x)^5}\,dx$?

A) $\frac{15}{8}5^{2/3}x^{8/3} + \frac{1}{128x^2} + \frac{1}{x}$, B) $\frac{15}{8}5^{2/3}x^{8/3} - \frac{1}{128x^2} - \frac{1}{3x}$, C) $\frac{75}{8}5^{2/3}x^{8/3} - \frac{1}{128x^2} - \frac{1}{x}$, D) $\frac{15}{8}5^{2/3}x^{8/3} - \frac{1}{8x^2} - \frac{1}{x}$, E) $\frac{15}{8}5^{2/3}x^{8/3} - \frac{1}{32x^2} - \frac{1}{x}$

(2) Mennyi $\int \frac{5}{4^2+5^2x} + \sin(3x) + e^{-4x}\,dx$?

A) $-e^{-4x} - \frac{1}{3}\cos(3x) + \frac{1}{4}\tan^{-1}\left(\frac{5x}{4}\right)$
B) $-\frac{e^{-4x}}{4} + \frac{1}{3}\cos(3x) + \frac{1}{4}\tan^{-1}\left(\frac{5x}{4}\right)$
C) $-\frac{e^{-4x}}{4} - \frac{1}{3}\cos(3x) + \frac{1}{4}\tan^{-1}\left(\frac{5x}{4}\right)$
D) $-\frac{e^{-4x}}{4} - \frac{1}{3}\cos(3x) + \frac{1}{5}\tan^{-1}\left(\frac{5x}{4}\right)$
E) $-\frac{e^{-4x}}{4} - \frac{1}{3}\sin(3x) + \frac{5}{4}\tan^{-1}\left(\frac{5x}{4}\right)$

(3) Mennyi $\int (2 + 4x)\sin(3x)\,dx$?

A) $\frac{4}{9}\sin(3x) - \frac{4}{3}x\cos(3x) - \frac{2}{3}\cos(3x)$
B) $\frac{4}{27}\sin(3x) - \frac{4}{9}x\cos(3x) - \frac{2}{9}\cos(3x)$
C) $\frac{1}{9}\sin(3x) - \frac{1}{3}x\cos(3x) - \frac{2}{3}\cos(3x)$
D) $-\frac{4}{9}\sin(3x) + \frac{4}{3}x\cos(3x) - \frac{2}{3}\cos(3x)$
E) $\frac{4}{3}x\sin(3x) - \frac{2}{9}\cos(3x)$

(4) Mennyi $\int x^2 \log(3x)\,dx$?

A) $\frac{1}{3}x^3\log(3x) - \frac{x^3}{9}$, B) $\frac{1}{4}x^4\log(3x) - \frac{x^4}{16}$, C) $x^3\log(3x) - \frac{x^3}{3}$, D) $\frac{1}{3}x^3\log(x) - \frac{x^3}{9}$, E) $\frac{1}{2}x^2\log(3x) - \frac{x^2}{4}$

(5) Mennyi $\int x^4 \cos(3x^5)\,dx$?

A) $\frac{1}{12}x\sin(3x) + \frac{1}{36}\cos(3x)$, B) $\frac{1}{3}x\sin(3x) + \frac{1}{9}\cos(3x)$, C) $\frac{1}{15}\sin\left(3x^5\right)$, D) $\frac{4\sin\left(x^5\right)}{5}$, E) $\frac{1}{12}\sin\left(3x^4\right)$

(6) Mennyi $\int x^4 \sin(3x^5)\,dx$?

A) $\frac{1}{9}\sin(3x) - \frac{1}{3}x\cos(3x)$
B) $-\frac{1}{15}\cos\left(3x^5\right)$
C) 13.2
D) $-\frac{1}{5}\cos\left(x^5\right)$
E) $-\frac{1}{12}\cos\left(3x^4\right)$

(7) Mennyi $\int \frac{4x+4}{1+1x^2}\,dx$?

A) 13.2
B) $-4\log(x - 1)$
C) $2\log\left(x^2 + 1\right) - 4\tan^{-1}(x)$
D) $2\log\left(x^2 + 1\right) + 4\tan^{-1}(x)$
E) 17.3

(8) Mennyi $\int_{-3}^{1} f(x)\,dx$, ha $f(x) = \begin{cases} 2 & \text{if } x < 0 \\ 2 + 2x & \text{if } x > 0. \end{cases}$?

A) 8, B) 7, C) 9, D) 4, E) 5

(9) Mennyi $\int_{-2}^{3} f(x)\,dx$, ha $f(x) = \begin{cases} 5 + 3x & \text{if } x < 0 \\ 3 & \text{if } x > 0. \end{cases}$?

A) 11, B) 13, C) 9, D) 10, E) 8

(10) $y' = 1x^2 + 4x + 1$, $y(4) = 4$. Mennyi $y(5)$?

A) $\frac{103}{3}$, B) $\frac{130}{3}$, C) $\frac{106}{3}$, D) $\frac{100}{3}$, E) $\frac{109}{3}$

(11) Keresd meg az $f(x) = x^2 - 12x + 28$ es az $g(x) = 2x + 4$ fuggvenyek altal bezart teruletet!

A) $\frac{7}{3}$, B) $\frac{5}{3}$, C) $\frac{4}{3}$, D) $\frac{10}{3}$, E) $\frac{2}{3}$

(12) $y'' = 2x + 2$, $y(3) = 2$, $y'(3) = 5$. Mennyi $y(4)$?

A) $\frac{4}{3}$, B) $\frac{34}{3}$, C) $\frac{13}{3}$, D) $\frac{19}{3}$, E) $\frac{10}{3}$

(13) Szamold ki az $r(t) = (2t^2 + 1, 2t^2)$ $t \in [1, 6]$ gorbe ivhosszat!

A) $5\sqrt{5}\left(16\sqrt{2} - 1\right)$, B) $\frac{5}{3}\sqrt{5}\left(16\sqrt{2} - 1\right)$, C) $\frac{25}{3}\sqrt{5}\left(16\sqrt{2} - 1\right)$, D) $\frac{10}{3}\sqrt{5}\left(16\sqrt{2} - 1\right)$, E) $\frac{20}{3}\sqrt{5}\left(16\sqrt{2} - 1\right)$

(14) Szamold ki az $f(x) = 5x + 2$, $x \in [1, 5]$ fuggveny ivhosszat!

A) $8\sqrt{26}$, B) $4\sqrt{26}$, C) $2\sqrt{26}$, D) $10\sqrt{26}$, E) $6\sqrt{26}$

(15) Szamold ki az $f(x) = 3x + 4$, $x \in [2, 3]$ fuggveny x tengely koruli megforgatasaval keletkezett forgastest feluletet!

A) $17\sqrt{10}\pi$, B) $34\sqrt{10}\pi$, C) $68\sqrt{10}\pi$, D) $85\sqrt{10}\pi$, E) $51\sqrt{10}\pi$

(16) Szamold ki az $f(x) = 2x + 4$, $x \in [5, 6]$ fuggveny x tengely koruli megforgatasaval keletkezett forgastest terfogatat!

A) 1120π, B) 224π, C) 896π, D) 448π, E) 672π

(17) Szamold ki az $f(x) = 5x^2$, $x \in [4, 5]$ fuggveny x tengely koruli megforgatasaval keletkezett forgastest terfogatat!

A) $\frac{31250\pi}{3}$, B) $\frac{78125\pi}{3}$, C) $\frac{62500\pi}{3}$, D) 15625π, E) $\frac{15625\pi}{3}$

1^2: , 2^2: , 3^2: , 4^2: , 5^2: , 6^2: , 7^2: , 8^2: , 9^2: , 10^2: , 11^2: , 12^2: , 13^2: , 14^2: , 15^2: , 16^2: , 17^2: ,

0.5. **No.5.**

(1) Mennyi $\int \frac{1}{x^3} + \frac{1}{3x^2} + \sqrt[4]{(2x)^4}\,dx$?

A) $x^2 - \frac{1}{4x^2} - \frac{1}{9x}$, B) $2x^2 - \frac{1}{2x^2} - \frac{1}{9x}$, C) $x^2 + \frac{1}{2x^2} + \frac{1}{9x}$, D) $x^2 - \frac{1}{2x^2} - \frac{1}{3x}$, E) 13.2

(2) Mennyi $\int \frac{5}{4^2 + 5^2 x} + \sin(5x) + e^{-5x}\,dx$?

A) $-e^{-5x} - \frac{1}{5}\cos(5x) + \frac{1}{4}\tan^{-1}\left(\frac{5x}{4}\right)$

B) $-\frac{e^{-5x}}{5} + \frac{1}{5}\cos(5x) + \frac{1}{4}\tan^{-1}\left(\frac{5x}{4}\right)$

C) $-\frac{e^{-5x}}{5} - \frac{1}{5}\sin(5x) + \frac{5}{4}\tan^{-1}\left(\frac{5x}{4}\right)$

D) $-\frac{e^{-5x}}{5} - \frac{1}{5}\cos(5x) + \frac{1}{5}\tan^{-1}\left(\frac{5x}{4}\right)$

E) $-\frac{e^{-5x}}{5} - \frac{1}{5}\cos(5x) + \frac{1}{4}\tan^{-1}\left(\frac{5x}{4}\right)$

(3) Mennyi $\int (4 + 2x)\sin(5x)\,dx$?

A) $\frac{2}{25}\sin(5x) - \frac{2}{5}x\cos(5x) - \frac{4}{5}\cos(5x)$

B) $\frac{2}{125}\sin(5x) - \frac{2}{25}x\cos(5x) - \frac{4}{25}\cos(5x)$

C) $\frac{2}{5}x\sin(5x) - \frac{18}{25}\cos(5x)$

D) $\frac{1}{25}\sin(5x) - \frac{1}{5}x\cos(5x) - \frac{4}{5}\cos(5x)$

E) $-\frac{2}{25}\sin(5x) + \frac{2}{5}x\cos(5x) - \frac{4}{5}\cos(5x)$

(4) Mennyi $\int x^5 \log(2x)\,dx$?

A) $\frac{1}{5}x^5 \log(2x) - \frac{x^5}{25}$, B) $\frac{1}{6}x^6 \log(x) - \frac{x^6}{36}$, C) $\frac{1}{6}x^6 \log(2x) - \frac{x^6}{36}$, D) $\frac{1}{3}x^6 \log(2x) - \frac{x^6}{18}$, E) $\frac{1}{7}x^7 \log(2x) - \frac{x^7}{49}$

(5) Mennyi $\int x^3 \cos(5x^4)\,dx$?

A) $\frac{1}{20}\sin\left(5x^4\right)$, B) $\frac{1}{15}x\sin(5x) + \frac{1}{75}\cos(5x)$, C) $\frac{1}{5}x\sin(5x) + \frac{1}{25}\cos(5x)$, D) $\frac{3\sin\left(x^4\right)}{4}$, E) $\frac{1}{15}\sin\left(5x^3\right)$

(6) Mennyi $\int x^4 \sin(4x^5)\,dx$?

A) 13.2

B) $\frac{1}{16}\sin(4x) - \frac{1}{4}x\cos(4x)$

C) $-\frac{1}{5}\cos\left(x^5\right)$

D) $-\frac{1}{16}\cos\left(4x^4\right)$

E) $-\frac{1}{20}\cos\left(4x^5\right)$

(7) Mennyi $\int \frac{5x+4}{1+4x^2}\,dx$?

A) $\frac{5}{8}\log\left(4x^2 + 1\right) + 2\tan^{-1}(2x)$

B) $\frac{3}{8}\log(-4(2x + 1)) - \frac{13}{8}\log(4(2x - 1))$

C) $\frac{5}{2}\log\left(4x^2 + 1\right) + 8\tan^{-1}(2x)$

D) $\frac{3}{2}\log(-4(2x + 1)) - \frac{13}{2}\log(4(2x - 1))$

E) $\frac{5}{8}\log\left(4x^2 + 1\right) - 2\tan^{-1}(2x)$

(8) Mennyi $\int_{-4}^{-1} f(x)\,dx$, ha $f(x) = \begin{cases} 5 & \text{if } x < 0 \\ 2 + 2x & \text{if } x > 0. \end{cases}$?

A) 10, B) 11, C) 13, D) 12, E) 15

(9) Mennyi $\int_{-2}^{2} f(x)\,dx$, ha $f(x) = \begin{cases} 1 + 3x & \text{if } x < 0 \\ 5 & \text{if } x > 0. \end{cases}$?

A) 1, B) 2, C) 3, D) 6, E) 4

(10) $y' = 2x^2 + 4x + 5$, $y(4) = 2$. Mennyi $y(5)$?

A) $\frac{170}{3}$, B) $\frac{173}{3}$, C) $\frac{176}{3}$, D) $\frac{197}{3}$, E) $\frac{167}{3}$

(11) Keresd meg az $f(x) = x^2 - 16x + 35$ es az $g(x) = 4x + 3$ fuggvenyek altal bezart teruletet!

A) $\frac{11}{3}$, B) $\frac{2}{3}$, C) $\frac{32}{3}$, D) $\frac{8}{3}$, E) $\frac{14}{3}$

(12) $y'' = 5x + 4$, $y(4) = 3$, $y'(4) = 2$. Mennyi $y(5)$?

A) $\frac{53}{6}$, B) $\frac{59}{6}$, C) $\frac{47}{6}$, D) $\frac{65}{6}$, E) $\frac{107}{6}$

(13) Szamold ki az $r(t) = (3t^2 + 2, 1t^2)$ $t \in [3, 6]$ gorbe ivhosszat!

A) $\frac{9}{2}\left(16\sqrt{2} - 5\sqrt{5}\right)$, B) $\frac{27}{2}\left(16\sqrt{2} - 5\sqrt{5}\right)$, C) $9\left(16\sqrt{2} - 5\sqrt{5}\right)$, D) $18\left(16\sqrt{2} - 5\sqrt{5}\right)$, E) $\frac{45}{2}\left(16\sqrt{2} - 5\sqrt{5}\right)$

(14) Szamold ki az $f(x) = 3x + 5$, $x \in [2, 4]$ fuggveny ivhosszat!

A) $4\sqrt{10}$, B) $3\sqrt{10}$, C) $5\sqrt{10}$, D) $2\sqrt{10}$, E) $\sqrt{10}$

(15) Szamold ki az $f(x) = 4x + 1$, $x \in [4, 5]$ fuggveny x tengely koruli megforgatasaval keletkezett forgastest feluletet!

A) $\frac{440\sqrt{17}\pi}{3}$, B) $110\sqrt{17}\pi$, C) $\frac{550\sqrt{17}\pi}{3}$, D) $\frac{220\sqrt{17}\pi}{3}$, E) $\frac{110\sqrt{17}\pi}{3}$

(16) Szamold ki az $f(x) = 3x + 5$, $x \in [4, 5]$ fuggveny x tengely koruli megforgatasaval keletkezett forgastest terfogatat!

A) $\frac{875\pi}{3}$, B) $\frac{3500\pi}{3}$, C) $\frac{1750\pi}{3}$, D) 875π, E) $\frac{4375\pi}{3}$

(17) Szamold ki az $f(x) = 5x^2$, $x \in [2, 3]$ fuggveny x tengely koruli megforgatasaval keletkezett forgastest terfogatat!

A) 1620π, B) 1215π, C) 2025π, D) 810π, E) 405π

1^2:   , 2^2:   , 3^2:   , 4^2:   , 5^2:   , 6^2:   , 7^2:   , 8^2:   , 9^2:   , 10^2:   , 11^2:   , 12^2:
, 13^2:   , 14^2:   , 15^2:   , 16^2:   , 17^2:   ,

A) $\frac{875\pi}{3}$, B) $\frac{3500\pi}{3}$, C) $\frac{1750\pi}{3}$, D) 875π, E) $\frac{4375\pi}{3}$

(17) Szamold ki az $f(x) = 5x^2$, $x \in [2, 3]$ fuggveny x tengely koruli megforgatasaval keletkezett forgastest terfogatat!

A) 1620π, B) 1215π, C) 2025π, D) 810π, E) 405π

Megoldas

1   1^2:D, 2^2:C, 3^2:C, 4^2:C, 5^2:D, 6^2:B, 7^2:B, 8^2:E, 9^2:D, 10^2:B, 11^2:E, 12^2:E, 13^2:A, 14^2:B, 15^2:B, 16^2:E, 17^2:D,

2   1^2:D, 2^2:C, 3^2:A, 4^2:D, 5^2:D, 6^2:C, 7^2:D, 8^2:E, 9^2:C, 10^2:D, 11^2:D, 12^2:C, 13^2:D, 14^2:D, 15^2:D, 16^2:E, 17^2:B,

3   1^2:C, 2^2:C, 3^2:B, 4^2:A, 5^2:A, 6^2:C, 7^2:C, 8^2:C, 9^2:D, 10^2:E, 11^2:B, 12^2:A, 13^2:B, 14^2:D, 15^2:B, 16^2:A, 17^2:B,

4   1^2:D, 2^2:C, 3^2:A, 4^2:A, 5^2:C, 6^2:B, 7^2:D, 8^2:C, 9^2:B, 10^2:B, 11^2:C, 12^2:B, 13^2:D, 14^2:B, 15^2:E, 16^2:E, 17^2:D,

5   1^2:D, 2^2:E, 3^2:A, 4^2:C, 5^2:A, 6^2:E, 7^2:A, 8^2:E, 9^2:D, 10^2:D, 11^2:C, 12^2:E, 13^2:C, 14^2:D, 15^2:B, 16^2:D, 17^2:B,