

## Math.Econ.Anal.Quiz.2.exercises 15.oct.5.

1. Compute  $\lim_{n \rightarrow \infty} \left(1 + \frac{4}{3n}\right)^{2n+2}$  !
2. Compute  $\lim_{n \rightarrow \infty} \left(2 - \frac{6}{5n}\right)^{n-2}$  !
3. Compute  $\lim_{n \rightarrow \infty} \left(0.4 - \frac{6}{5n}\right)^{5n-2}$  !
4. Compute  $\lim_{n \rightarrow \infty} \left(1 + \frac{1}{n/2}\right)^{3n-2}$  !
5. Let  $f(x) = x^3 - 5x$ ,  $x_0 = 1$ . Compute  $\frac{f(x_0+\Delta x)-f(x_0)}{\Delta x}$  !
6. Let  $f(x) = 1 - 5x$ ,  $x_0 = 1$ . Compute  $\frac{f(x_0+\Delta x)-f(x_0)}{\Delta x}$  !
7. Let  $f(x) = 2^x$ . Compute  $\frac{f(x_0+\Delta x)-f(x_0)}{\Delta x}$  !
8. Let  $f(x) = -x^2 + 5x$ ,  $x_0 = 3$ . What is the prediction of the linear approximation of  $f$  around  $x_0$  for the value of  $f(3 + \Delta x)$  ?
9. Let  $f(x) = e^{3x}$ ,  $x_0 = 4$ . What is the prediction of the linear approximation of  $f$  around  $x_0$  for the value of  $f(3 + \Delta x)$  ?
10. Compute  $(x^3 \sin(4x))'$  !
11. Compute  $(x^3 / \sin(4x))'$  !
12. Compute  $(\cos(\sin(4x)))'$  !
13. Compute  $((\sin(4x))^3)'$  !
14. Compute  $((5x)^3 + \sin(4x) - \sqrt[3]{x^5})'$  !