

Math 1314

Derivatives – Examples

For each function, find the first derivative.

1. $f(x) = e^{3x^2}$

2. $f(x) = \frac{3x^4 - 7x^2 + 5x - 1}{x^2}$

3. $f(x) = \frac{x^2 + 3}{x + 1}$

4. $f(x) = \ln\left(\frac{x - 5}{x + 2}\right)$

5. $f(x) = \frac{1}{(x^2 - 5)^4}$

6. $f(x) = 5xe^{3x}$

7. $f(x) = \frac{4}{x^2 + 3}$

8. $f(x) = \frac{5}{x^2} - \frac{\sqrt{x}}{2}$

9. $f(x) = \ln\left((2x^3 - 5)^4\right)$

10. $f(x) = (x^2 - 4x + 3)^4$

11. $f(x) = \sqrt{x^2 + 6x + 8}$

12. $f(x) = 3x^4 - 2x^3 - 6x^2 - 4x + 7$

13. $f(x) = x^2 \ln(4x)$

Find the second derivative of each function listed.

14. $f(x) = 4x^3 - 7x^2 + 8x + 9$

15. $f(x) = \frac{4}{x-7}$

16. $f(x) = xe^{4x^2}$