

Find the derivative of each function

1. $f(x) = \tan(\ln(x))$

2. $f(x) = \sec(x)$

Hint: $\sec(x) = \frac{1}{\cos(x)}$

3. $f(x) = \sec(x^2 + 3x)$

4. $f(x) = -\ln(\cos(x))$

5. $f(x) = e^{x^2 \sin(x)}$

6. $f(x) = e^{5x} \sqrt{3 - \ln(x)}$

7. $f(x) = 3^{\sqrt{\sin(x)}}$

8. $f(x) = \ln(x^2 + 1) \cos\left(\frac{e^{3x}}{2x + 1}\right)$

13. Find the second derivative of $f(x) = e^{\sec(x)}$

14. Find an antiderivative of each function

(a) $f(x) = 3x^2 \cos(x^3)$

Hint: Think Chain Rule

(b) $g(x) = 2x \cos(e^x) - x^2 \sin(e^x)e^x$

Hint: Think Product Rule & Chain Rule

(c) $h(x) = \frac{2x + 3}{x^2 + 3x + 5}$

Hint: Think Chain Rule