

Find the derivative of each function

1. $h(x) = e^{-3x} \sin(2x)$

2. $g(x) = \sqrt[4]{1 - \cos(x)}$

3. $g(x) = \frac{e^{4x}}{8 + e^x}$

4. $f(x) = \sqrt{\ln(e^{x^2} \sec(x))}$

5. $f(x) = \frac{5x^2 \tan(x)}{\sec(x^3)}$

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

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

8. $f(x) = \frac{x \sin(x^2)^2}{\sqrt{1 + x^2}}$