

The Product and Quotient Rules- HW Problems

Find the derivative of the following functions.

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

2. $g(x) = (x - 3x^2)(4x^2 + 1)$

3. $f(t) = \frac{t^4}{1-t^2}$

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

5. $h(t) = \frac{3}{t^2}$

6. $f(x) = \frac{10x^7-2x^2}{2x^4}$

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

8. $h(x) = \frac{(x^2+1)(x^3-x)}{x^2+2}$

9. Find an equation of the tangent line to each function at the given point.

a. $y = \frac{1}{1+x^2}$ at $(-1, \frac{1}{2})$

b. $y = \frac{x}{1+x^2}$ at $(2, \frac{2}{5})$

c. $y = \frac{x}{x+\frac{1}{x}}$ at $(1, \frac{1}{2})$