

Find $\frac{dy}{dx}$.

5) $y = \frac{2x^2 - 4x - 1}{x}$

6) $y = \frac{9x^2 + 2x - 1}{\sqrt[3]{x}}$

7) $y = \sqrt{x}(x^2 - 2x - 3)$

8) $y = \left(\frac{4}{x} + x\right)(x + 1)$

9) $y = \frac{3}{x^2 + 4}$

10) $y = \frac{3x^2 - 2x - 5}{x^2 + 1}$

11) $y = 4x^2 \sec x$

12) $y = \frac{\cos x}{x - 4}$

Answer each question.

13) Find the instantaneous rate of change of $y = 3\sin x$ when $x = \frac{\pi}{3}$

14) Find the average rate of change of $y = \sin 2x$ from $x = 0$ to $x = \frac{\pi}{2}$.

15) Write the equation of the line tangent to the function $y = 2x^4 + x$ at $x = 1$.

16) Find the equation of the normal line to the function $y = 2x^2 - x + 3$ at the point when $x = 2$.