

1. Use the definition of the derivative to find $f'(x)$ if $f(x) = 4 + \frac{4}{x}$.

2. Verify that you did the previous problem correctly by using the differentiation shortcuts.

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

(a) Find the slope of the tangent line at $(1, f(1))$.

(b) Find the equation of the tangent line at $(1, f(1))$.

4. If $h(t) = \frac{-t^2}{2t+1}$, find and simplify $h'(t)$.

5. The total sales of a company (in millions of dollars) t months from now are given by $S(t) = 0.015t^4 + 0.5t^3 + 3.4t^2 + 10t - 3$.

(a) Find $S(4)$ and explain what it means.

(b) Find $S'(4)$ and explain what it means.