**1.** Find f'(a) using the definition of the derivative:

$$f(t) = 2t^2 + t$$

**2.** Find f'(3) using the definition of the derivative:

$$f(x) = x^{-2}$$

**3.** Find f'(a) using the definition of the derivative:

$$f(x) = \sqrt{1 + 5x}$$

**4.** Find an equation of the tangent line to the curve at the given point:

$$f(x) = \frac{x+1}{x-1}, \qquad (2,3)$$

Also sketch both the curve y = f(x) and the tangent line.

**5.** A particle moves a distance s=f(t) along a straight line, where s is measured in meters and t is in seconds:

$$f(t) = 40t - 5t^2$$

Find the velocity and speed when t=4.