Quiz 13

Name: _____

1. Compute the derivative of the following function.

$$f(x) = (x+8)\sqrt{x}.$$

$$f'(x) = \sqrt{x} + (x+8) \cdot \frac{1}{2\sqrt{x}}$$

2. Using your result from part (a), find the equation of the tangent line to $f(x)$ at $x = 4$. We start with $y = mx + b$. This is a tangent line, which always means $m = f'(4) = \sqrt{4} + (4+8)\frac{1}{2\sqrt{4}} = 5$.
   Next, $y = f(4) = (4+8)\sqrt{4} = 24$, so set up the equation

$$24 = 5(4) + b$$

   and you get $b = 4$. Thus, the equation is

$$y = 5x + 4.$$