1) (10 points) Mark the following statements "True" or "False". (Don't guess: -2 points for each wrong answer!)
   (a) The lines $2x - 4y = 7$ and $2x + y = 3$ are perpendicular.
   (b) $(2^x)^{-1} = 2^{x-1}$
   (c) $\frac{d}{dx} 2^x = 4 \cdot 2^{3}$
   (d) $\frac{d}{dx} 2x\sqrt{x} = 3\sqrt{x}$
   (e) $y = 7x^2$ has a tangent line parallel to $2x + y = 1$.

   Answers ("T" or "F")

2) (14 points) Referring to the tangent line picture to the right, find $f(4)$, $f'(4)$, and (approximately) $f(3.9)$. 

   \[ y = f(x) \]

   \[ \text{Graph with point at } (4, 3) \]
3. (16 points) Compute the following limits:

(a) \( \lim_{x \to 2} \frac{x^2 + x - 6}{x^2 + 2x - 8} = \)

(b) \( \lim_{x \to 4} \frac{2 - \sqrt{x}}{x - 4} = \)

(c) \( \lim_{t \to 0} \frac{\sqrt{t} + 4 - 2}{t} = \)

(d) \( \lim_{t \to \infty} \frac{2t^2 + t\sqrt{t} + 1}{3 - t^2} = \)
(a) \[ \frac{d}{dx} \left( \frac{3}{1+x^2-x^3} \right) = \]

(b) \[ \frac{d}{dx} \left( 2\sqrt{x} + (2x^2+1)^3 \right) = \]

(c) \[ \frac{d}{dx} \left( x(\sqrt{x} + \sqrt[3]{\frac{1}{x}}) \right) = \]
(5) (16 points) (a) Use the Newton Quotient Method to compute \( \frac{d}{dx} \left( \frac{1}{\sqrt{x}} \right) \).

(b) Find the linear function \( y = mx + b \) that best approximates the function \( f(x) = \frac{1}{\sqrt{x}} \) at the point \( a = 4 \).
(9 points) Find the equations of the two tangent lines that can be drawn from \((-2, -5)\) to the curve \(y = x^2\).