Problem 1: (20 points)

(a) Use the definition of the derivative to find $f'(3)$ where $f(x) = \frac{1}{x - 2}$

(b) Find the equation of the line tangent to the curve $y = 3x^2 - 4$ at the point (1, -1).

(c) A circular disk is being heated. Find the rate of change in the area of the disk with respect to the radius when the radius is $r = 2 \text{ ft}$. Also find the percentage rate of change at $r = 2 \text{ ft}$.
Problem 2: (20 points) Find the derivative of each of the following functions

(a) \( f(x) = \sqrt{x} + \frac{1}{\sqrt{x}} \)

(b) \( f(x) = \frac{(1+x)^3}{x^2 + 4} \)

(c) \( f(m) = \frac{m^2}{\sqrt{m^3 + 1}} \)