1(2) \[ z = \frac{3x}{x^2 - 1} \quad \frac{dz}{dx} = \]

3(2) \[ y = \sqrt{2 - \frac{1}{x}} \quad \frac{dy}{dx} = \]

4(2) \[ r = -\sqrt{u}, \quad u = \cos(w), \quad w = \theta^2, \quad \frac{dr}{d\theta} = \]

5(3) \[ x = -4 \cos t, \quad y = 2 \sin t. \quad \text{Find the equation for the line tangent to this curve when } t = \pi/4. \]

2(3) A rock is thrown upward. Its height at time \( t \) is \( y = t - 4t^2 \)

(a)(1) What is its acceleration at time \( t \)?

(b)(2) When is the rock at maximum height?