

Section 3.9: Additional Problems

1. Find $\frac{dx}{dt}$ when $y = 2$ and $\frac{dy}{dt} = -3$

$$x^2 + 2xy^2 + y^3 = 8$$

2. The length of a rectangle is increasing at a rate of 5 cm/sec and its width is decreasing at a rate of 4 cm/sec. When the length is 10 cm and the width is 20 cm, what is the rate of change of the area of the rectangle?
3. Noah travels due north and Eddie travels due east from a common starting point. At time t (in seconds), Noah's distance(in feet) from the starting location is y and Eddie's distance from the starting location is x . At what rate is the distance between Noah and Eddie changing after 2 seconds?

$$y = 10 + 4t + \frac{1}{2}t^2$$

$$x = 7 + t^3$$