Name _____ Quiz 3

1 In each of the following, find $\frac{dy}{dx}$.

(A) $y = 3(x^5 + 3x^2 + 4x + 1)^9$

$$y' = 21(x^5 + 3x^2 + 4x + 1)^8 \cdot (5x^4 + 6x + 4)$$

(B) $x^2 + 3y^2 = 3x^3$

$$\frac{d}{dx}(x^2 + 3y^2) = \frac{d}{dx}(3x^3)$$
$$2x + 6yy' = 9x^2$$
$$6yy' = 9x^2 - 2x$$
$$y' = \frac{9x^2 - 2x}{6y}$$

2) A square concrete mold is increasing in size as the concrete fills the inside. If the side length is increasing at a rate of 2ft/min, how fast is the area of concrete changing when the square is 3 feet wide?

$A = x^2$
$A' = 2xx'$

$x = 3$
$x' = 2$

$A = 2 \cdot 3 \cdot 2 = 12\ ft^2/min$