

1) Find the derivative of  $f(x) = (x^3 + 5x^2 + 3x + 2)^6$

$$f'(x) = 6(x^3 + 5x^2 + 3x + 2)^5(3x^2 + 10x + 3)$$

2) Find  $\frac{d}{dx}(\sin(7^{3x^2}))$

$$\frac{d}{dx}(\sin(7^{3x^2})) = \cos(7^{3x^2}) \cdot 7^{3x^2} \ln(7) \cdot 6x$$

3) Suppose the position of a rolling ball is given by  $s(t) = 3t^2 + 5t - 6$  feet, where  $t$  is measured in seconds. Find the velocity of the ball after 2 seconds.

The velocity is given by:

$$s'(t) = 6t + 5$$

So the velocity after 2 seconds is:

$$s'(2) = 17 \text{ feet per second}$$