

Exercise 6

Differentiate the function.

$$g(x) = \frac{7}{4}x^2 - 3x + 12$$

Solution

Take the derivative of the given function.

$$g'(x) = \frac{d}{dx} \left(\frac{7}{4}x^2 - 3x + 12 \right)$$

Use the sum and difference rules.

$$g'(x) = \frac{d}{dx} \left(\frac{7}{4}x^2 \right) - \frac{d}{dx}(3x) + \underbrace{\frac{d}{dx}(12)}_{=0}$$

The derivative of a constant is zero.

$$g'(x) = \frac{d}{dx} \left(\frac{7}{4}x^2 \right) - \frac{d}{dx}(3x)$$

Use the constant multiple rule.

$$g'(x) = \frac{7}{4} \frac{d}{dx}(x^2) - 3 \frac{d}{dx}(x)$$

Use the power rule.

$$g'(x) = \frac{7}{4}(2x) - 3(1)$$

Therefore,

$$g'(x) = \frac{7}{2}x - 3.$$