Exercise 10

Differentiate the function.

$$H(u) = (3u - 1)(u + 2)$$

Solution

Expand the given function.

$$H(u) = 3u^2 + 5u - 2$$

Take the derivative of this function.

$$H'(u) = \frac{d}{du}(3u^2 + 5u - 2)$$

Use the sum and difference rules.

$$H'(u) = \frac{d}{du}(3u^2) + \frac{d}{du}(5u) - \underbrace{\frac{d}{du}(2)}_{=0}$$

The derivative of a constant is zero.

$$H'(u) = \frac{d}{du}(3u^2) + \frac{d}{du}(5u)$$

Use the constant multiple rule.

$$H'(u) = 3\frac{d}{du}(u^2) + 5\frac{d}{du}(u)$$

Use the power rule.

$$H'(u) = 3(2u) + 5(1)$$

Therefore,

$$H'(u) = 6u + 5.$$