

## Difference Quotient Practice

1. Given  $f(x) = x^2 - 5x - 1$  find the following and simplify.

(a).  $f(x + h)$

(b).  $f(x + h) - f(x)$

(c).  $\frac{f(x + h) - f(x)}{h}$

(d). If you let  $h = 0$ , what do you get from your answer to part (c)?

2. Given  $f(x) = 5x - 2x^2$ , find the following and simplify.

(a).  $f(x + h)$

(b).  $f(x + h) - f(x)$

(c).  $\frac{f(x + h) - f(x)}{h}$

(d). If you let  $h = 0$ , what do you get from your answer to part (c)?

3. Given  $f(x) = 3 - x^2$ , find the following and simplify.

(a).  $f(x + h)$

(b).  $f(x + h) - f(x)$

(c).  $\frac{f(x + h) - f(x)}{h}$

(d). If you let  $h = 0$ , what do you get from your answer to part (c)?

4. Given  $f(x) = 3x^2 + x - 4$ , find the following and simplify.

(a).  $f(x + h)$

(b).  $f(x + h) - f(x)$

(c).  $\frac{f(x+h) - f(x)}{h}$

(d). If you let  $h = 0$ , what do you get from your answer to part (c)?

5. Given  $z(t) = t^2 + 6$ , find the following and simplify.

(a).  $z(t + h)$

(b).  $z(t + h) - z(t)$

(c).  $\frac{z(t+h) - z(t)}{h}$

(d). If you let  $h = 0$ , what do you get from your answer to part (c)?

6. Given  $p(q) = 3 - q^2$ , find the following and simplify.

(a).  $p(q + h)$

(b).  $p(q + h) - p(q)$

(c).  $\frac{p(q+h) - p(q)}{h}$

(d). If you let  $h = 0$ , what do you get from your answer to part (c)?