

This worksheet is homework to be included in your homework notebook.

[Odd-Numbered Answers on Back]

1. Given  $f(x) = 4x^2$ , 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)?

2. Given  $f(x) = 2x^2 - x$ , 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  $f(x) = 9 - \frac{1}{2}x^2$ , 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  $f(x) = 1 - x^2$ , find and simplify  $\frac{f(x+h) - f(x)}{h}$ .

If you let  $h = 0$ , what does your answer become?

5. Given  $C(x) = 2x^2 - 4x + 3$ , find and simplify  $\frac{C(x+h) - C(x)}{h}$

If you let  $h = 0$ , what does your answer become?

6. Given  $p(q) = q^2 + 2q - 5$ , find and simplify  $\frac{p(q+h) - p(q)}{h}$

If you let  $h = 0$ , what does your answer become?

Answers to Odd Problems:

1. (a).  $4x^2 + 8xh + 4h^2$     (b).  $8xh + 4h^2$     (c).  $8x + 4h$     (d).  $8x$   
3. (a).  $9 - \frac{1}{2}x^2 - xh - \frac{1}{2}h^2$     (b).  $-xh - \frac{1}{2}h^2$     (c).  $-x - \frac{1}{2}h$     (d).  $-x$   
5.  $4x + 2h - 4$ ;     $4x - 4$