

Name _____ period _____ Date _____

Step 1: calculate $f(x+h)$. Simplify.Step 2: subtract $f(x)$ from the answer to Step 1Step 3: divide the answer to Step 2 by h Find the difference quotient for: $f(x) = x^2 - 4x + 3$

a) $f(x+h)$

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

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

Practice:

A. Given: $f(x) = 4x^2$, find the following and simplify.

d) $f(x+h)$

e) $f(x+h) - f(x)$

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

B. Given: $f(x) = \frac{1}{3x^2}$, find the following and simplify.

g) $f(x+h)$

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

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

Find the $\frac{f(x+h) - f(x)}{h}$ for:

1. $f(x) = x^2 - 5x - 1$

2. $f(x) = \frac{5}{x}$

3. $f(x) = 5x - 2x^2$

4. $f(x) = 17x^2 - 13x$

5. $f(t) = -16t^2 + 9t + 10$

6. $f(x) = \frac{1}{2}x^2 + 3x - 4$

7. $f(x) = \frac{5}{2x}$

8. Given: $f(x) = 3x^2 - 5x + 1$, find $\frac{f(2+h) - f(2)}{h}$

9. Given: $f(x) = \frac{1}{x}$, find $\frac{f(0.01+h) - f(0.01)}{h}$

10. Given: $g(x) = \sqrt{x}$, find $\frac{g(x+h) - g(x)}{h}$

11. Given: $g(x) = 3(x-4)^2 - 11$, find $\frac{g(a+h) - g(a)}{h}$