SM 2

Name:_____ Period:_____

4.5--Combining Functions Using Arithmetic Operations

Perform the indicated operations using the following functions:

$$f(x) = -3x + 1, \quad g(x) = (x-3)(x+2)$$

1. $h(x) = f(x) + g(x)$

2. $h(x) = g(x) - f(x)$

3. $h(x) = 2f(x) - 3g(x)$

4. $h(x) = -g(x) + 2f(x)$

5. $h(x) = f(x) \cdot g(x)$

6. $h(x) = f(x) \cdot f(x)$

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Find the value of each expressions given the following functions:

$$f(x) = 4x - 3, \quad g(x) = 4x^2 - 7x + 3, \quad h(x) = -x^2 + 1$$

7. $f(-1)$

8. $2g(0)$

9. $h(-3) + f(2)$

10. $3f(1) - g(2)$

11. $-h(-1) \cdot 2g(4)$

12. $f(-2) \cdot h(5)$

Use the following functions to write a new function. Find the domain. Then simplify.

$f(x)=-3x+2, \quad g(x)=(x-3)(x+2), \quad h(x)=x-3$

13. $j(x)=\dfrac{f(x)}{g(x)}$

Domain:

14. $j(x)=\dfrac{5g(x)}{g(x)}$

Domain:

15. $j(x)=\dfrac{g(x)}{h(x)}$

Domain:

Find the value of each expressions given the following functions:

$$f(x)=4x-3, \quad g(x)=4x^2-7x+3, \quad h(x)=-x^2+1$$

16. $\dfrac{f(-3)}{g(0)}$

17. $\dfrac{-h(-1)}{2g(4)}$

18. $\dfrac{f(6)}{h(4)}$

19. A company's cost and revenue can be modeled by the functions $C(x)=0.63x^2-215x+21{,}342$ and $R(x)=113x+342,$ where x is the number of units produced. The company's profit, *P*, is modeled by $P(x)=R(x)-C(x).$ Find the profit equation and determine the profit when 200 units are produced.

20. A service committee is organizing a fundraising dinner. The cost of renting a facility is \$450 plus \$6 per chair, or $C(x)=6x+450,$ where x represents the number of people attending the fundraiser. The committee plans to charge attendees \$25 each, or $R(x)=25x.$ The total amount raised is given by $P(x)=R(x)-C(x).$ How many people need to attend the fundraiser for the event to raise \$1678?