

## Comprehensive Review #2

Topics:

Lesson 21 - Evaluating Functions

Lesson 34 - Decomposing Functions

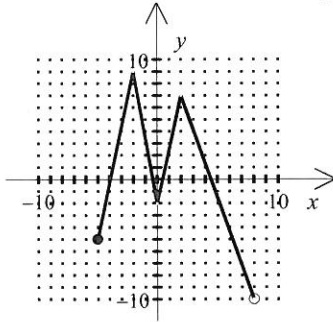
Lesson 38 - Designated Roots

1. Find  $f(3)$  given  $f(x) = x^2 - 5x - 11$ . [A] -6 [B] -47 [C] -23 [D] -17
2. Find  $f(3)$  given  $f(x) = 3x^2 - 5x - 12$ . [A] -18 [B] -30 [C] 0 [D] 12
3. Find  $f(300^\circ)$  given  $f(x) = -2 \cos x$ . Do not use a calculator.
4. If  $f(x) = x^2 + x + 2$ , find  $f(x+h)$ .
5. If  $f(x) = 2x^2 - 3x - 5$ , find  $f(x+h) - f(x)$ .
6. If  $f(x) = \frac{1}{2x}$ , find  $f(x+h) - f(x)$ .
7. If  $f(x) = x^2 - 1$ , find  $\frac{f(x+h) - f(x)}{h}$ .

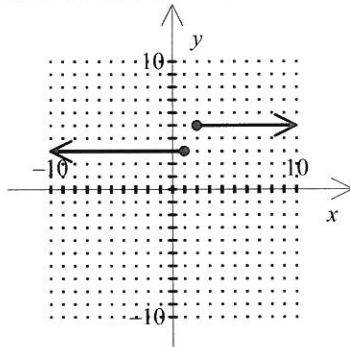
8. Find the domain of the function  $f(x) = \sqrt{5x+3}$ .

9. Find the domain of the function  $f(x) = \frac{\sqrt{x+9}}{x^2 - 5x + 4}$ .

10. Find the domain and range of the function whose graph is shown.



11. Determine whether the graph represents a function. If so, determine whether the graph is a one-to-one function or not.



[A] not a function

[B] a function, one-to-one

[C] a function, not one-to-one

[D] none of these

12. Find  $f$  where  $g(x) = x^2 + 6$  and  $(f \circ g)(x) = \frac{4}{x^2 + 6}$ .

[A]  $f(x) = \frac{4}{x}$

[B]  $f(x) = \frac{4}{x^2}$

[C]  $f(x) = x^3$

[D]  $f(x) = \sqrt{x}$

13. Find  $f$  where  $g(x) = x^3 + 2$  and  $(f \circ g)(x) = \sqrt[4]{x^3 + 2}$ .

[A]  $f(x) = \sqrt[4]{x}$

[B]  $f(x) = \frac{1}{x}$

[C]  $f(x) = \sqrt[5]{x}$

[D]  $f(x) = x^3$

14. Find  $f$  where  $g(x) = x^2 - 3$  and  $(f \circ g)(x) = (x^2 - 3)^2$ .

[A]  $f(x) = \frac{3}{x^2}$

[B]  $f(x) = x^3$

[C]  $f(x) = x^2$

[D]  $f(x) = \sqrt{x}$

15. Write the quadratic equation with a lead coefficient of 1 whose roots are  $-7$  and  $8$ .

[A]  $x^2 + x + 56 = 0$

[B]  $x^2 - x + 56 = 0$

[C]  $x^2 - x - 56 = 0$

[D]  $x^2 + x - 56 = 0$

16. Write the quadratic equation with a lead coefficient of 1 whose roots are  $4$  and  $-2$ .

[A]  $x^2 - 2x + 8 = 0$

[B]  $x^2 + 2x + 8 = 0$

[C]  $x^2 + 2x - 8 = 0$

[D]  $x^2 - 2x - 8 = 0$

17. Find two functions such that  $(f \circ g)(x) = \sqrt[4]{x^3 - 5}$ .

18. Find two functions such that  $(f \circ g)(x) = \frac{1}{x^3 + 3}$ .

