

**Pre-Calc AB: Function Review**

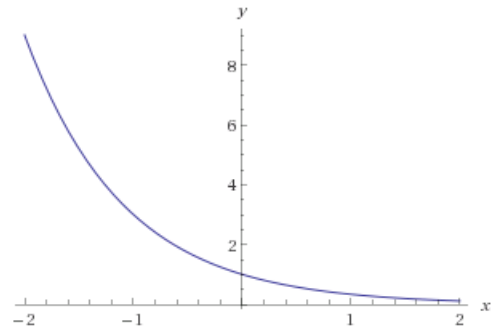
- Find  $f$  where  $g(x) = \sqrt[3]{x^3 + 4}$  and  $f \circ g(x) = \frac{1}{\sqrt[3]{x^3 + 4}}$ .
  - $f(x) = \sqrt[3]{x}$
  - $f(x) = \frac{1}{x}$
  - $f(x) = \frac{1}{x^3}$
  - $f(x) = x^3 - 4$
- Find the inverse function for  $y = 4x - 3$ .
  - $y = \frac{x-3}{4}$
  - $y = \frac{x+3}{4}$
  - $y = -4x + 3$
  - $y = 3y - 4$
- Given that  $f(x) = \frac{x-7}{x}$  and  $g(x) = x^2 - 8$ , find  $g \circ f(-7)$ .
  - $-\frac{31}{4}$
  - $-4$
  - $-6$
  - $\frac{34}{41}$
- Use symmetry tests to verify any of the three symmetries of the graph of  $y = 3x^3$ .
  - No symmetries
  - $y$ -axis only
  - origin only
  - $x$ -axis,  $y$ -axis, and origin
- The graph of a circle  $x^2 + y^2 = 6$  is translated -6 units horizontally and -2 units vertically. What is the general form of the equation of the translated graph?
  - $x^2 + y^2 - 12x - 4y + 34 = 0$
  - $x^2 + y^2 + 12x + 4y + 34 = 0$
  - $x^2 + y^2 - 6x - 2y + 12 = 0$
  - $x^2 + y^2 + 6x + 2y - 12 = 0$
- Let  $f(x) = \frac{1}{2}\sqrt{x}$ . Write the equation of  $g(x)$  which is the graph of  $f(x)$  reflected in the  $x$ -axis.
  - $g(x) = 2\sqrt{x}$
  - $g(x) = \frac{1}{2}\sqrt{-x}$
  - $g(x) = -\frac{1}{2}\sqrt{x}$
  - $g(x) = -\frac{1}{2}\sqrt{-x}$

7. Let  $f(x) = \frac{4}{x}$ . Write the equation of  $g(x)$  which is the graph of  $f(x)$  translated 2 units right and 1 unit down.
- (a)  $g(x) = \frac{4}{x+2} - 1$   
 (b)  $g(x) = \frac{4}{x+2} + 1$   
 (c)  $g(x) = \frac{4}{x-2} + 1$   
 (d)  $g(x) = \frac{4}{x-2} - 1$
8. Find  $f$  where  $g(x) = x^2 + 6$  and  $f \circ g(x) = (x^2 + 6)^2$ .
- (a)  $f(x) = x^3$   
 (b)  $f(x) = x^2$   
 (c)  $f(x) = \sqrt{x}$   
 (d)  $f(x) = \frac{4}{x^2}$
9. Complete the square to write the standard form of the parabola  $f(x) = \frac{1}{2}x^2 - 2x + 1$ .
- (a)  $\frac{1}{2}(x - 1)^2$   
 (b)  $\frac{1}{2}(x - 2)^2 - 1$   
 (c)  $\frac{1}{2}(x - 2)^2 - 3$   
 (d)  $\frac{1}{2}(x - 1)^2 - 1$
10. List the transformations of the function  $f(-x + 3)$  from  $f(x)$ .
- (a) reflect on  $x$ -axis then move left 3 units  
 (b) reflect on  $y$ -axis then move left 3 units  
 (c) reflect on  $x$ -axis then move right 3 units  
 (d) reflect on  $y$ -axis then move right 3 units
11. If the point  $(2, 3)$  is on the graph of  $R(x)$ , then what point must be on the graph of  $R^{-1}(x) - 1$ ?
- (a)  $(2, 3)$   
 (b)  $(3, 1)$   
 (c)  $(2, 4)$   
 (d)  $(3, 3)$
12. If the point  $(2, 3)$  is on the graph of  $R(x)$ , then what point must be on the graph of  $2R(\frac{1}{3}x)$ ?
- (a)  $(1, 1)$   
 (b)  $(1, 6)$   
 (c)  $(6, 6)$   
 (d)  $(6, 1)$

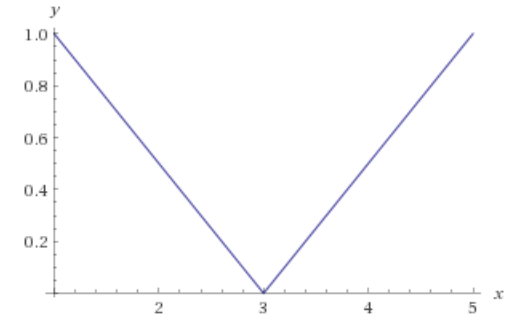
13. Let  $f(x) = x - x^2$ . Evaluate and simplify  $f(x + h) - f(x)$ .
- (a)  $h - 2xh - h^2$
  - (b)  $h$
  - (c)  $h - h^2$
  - (d)  $h + xh - h^2$
14. Which of the following is a function?
- (a)  $\{ (1,2), (2,1), (3,3) \}$
  - (b)  $\{ 1, 2, 3, \}$
  - (c)  $\{ (1,2), (2, 3), (1, 3) \}$
  - (d)  $\{ (1,2), (-3, 3), (-3, 1) (3, -3) \}$
15. If  $f(x) = -3x^2 - 2$  then what is  $\frac{f(x+h)-f(x)}{h}$ ?
- (a)  $-6x + 3h$
  - (b)  $1$
  - (c)  $-6x$
  - (d)  $-6x - 3h$
16. Find  $f(-1)$  given  $f(x) = x^3 - x + 3$
- (a)  $3$
  - (b)  $5$
  - (c)  $-1$
  - (d)  $1$
17. If  $(5,2)$  is a point on the graph of an even function  $f(x)$  with domain all real numbers then what other point must be on the graph of  $f(x)$ ?
- (a)  $(2,5)$
  - (b)  $(0,0)$
  - (c)  $(-5, -2)$
  - (d)  $(-5, 2)$
18. Graph:  $f(x) = \left(\frac{1}{3}\right)^x$
19. Graph:  $f(x) = \frac{1}{2}|x - 3|$
20. Graph:  $f(x) = \frac{1}{(x+1)^2} - 4$

1. B
2. B
3. B
4. C
5. B
6. C
7. D
8. B
9. B
10. D
11. B
12. C
13. A
14. A
15. D
16. A
17. D

18.



19.



20.

