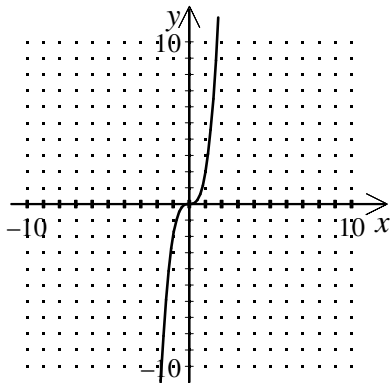


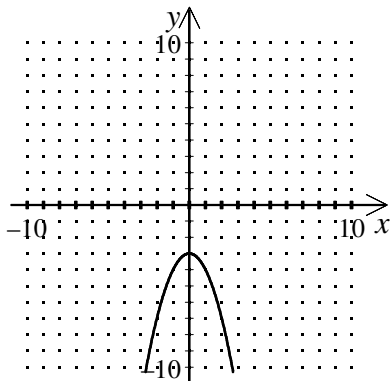
MATH 244/GRACEY  
CHAPTER 2.5-2.6 PRACTICE

1. Use symmetry tests to verify any of the three symmetries ( $x$ -axis,  $y$ -axis, or origin) the graph suggests.



2. Which symmetries does the graph of  $4x^6y^5 - 3x^4y^7 = 6$  possess?

3. Use the graph to determine if the function is even, odd, or neither.



4. One of the following functions is neither odd nor even. Which one?

[A]  $x^4 + 9x + 2 + |x - 2|$

[B]  $-11x^3 + 9x$

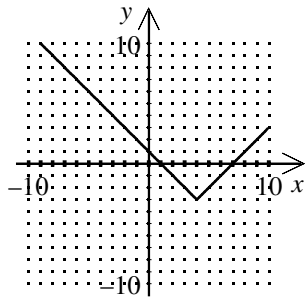
[C]  $5x^2 - |x^2| + 15$

[D]  $x^5 + 9x^3 + 5x$

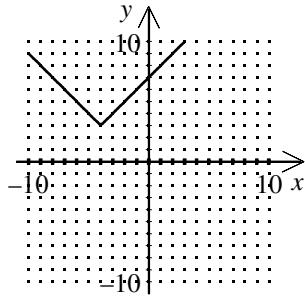
5. Which of the following functions is odd?

6. Use the graph of  $f(x) = |x|$  to identify the graph of  $f(x) = |x + 4| - 3$ .

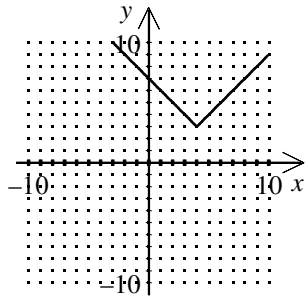
[A]



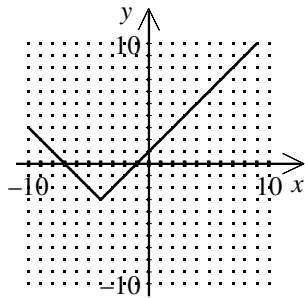
[B]



[C]

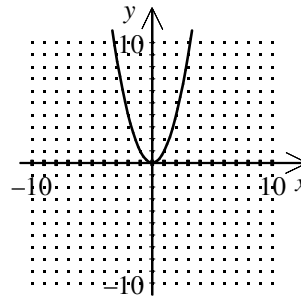


[D]



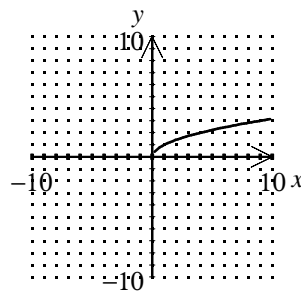
(6.)

7. Use transformations of the graph of  $y = x^2$  to determine the graph of  $y = (x + 5)^2 - 9$ .

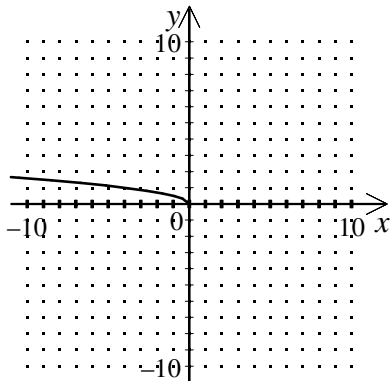
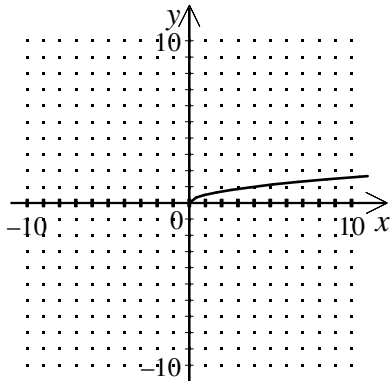


8. Without using graphing technology, sketch the parent graph and translate it to obtain the graph of  $y - 2 = |x + 3|$ .

9. The graph of the function  $f(x) = \sqrt{x}$  is shown below. Find the equation and the graph of the function  $g(x)$  which is the reflection of  $f(x)$  in the  $x$ -axis.

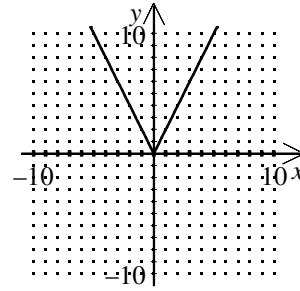


10. The graph of the function  $f(x) = \frac{1}{2}\sqrt{x}$  is shown on the left below. The graph on the right is the same graph reflected over the  $y$ -axis. Find the equation of the graph on the right.

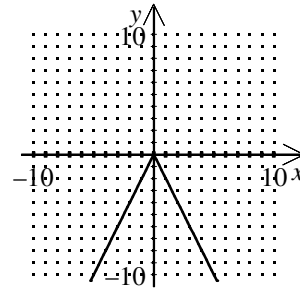


11. Given  $f(x) = |x|$ , consider a dilation by a factor of 2. Find the dilated function and its graph.

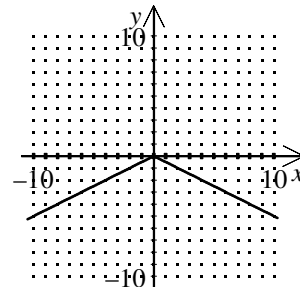
[A]  $f(x) = 2|x|$



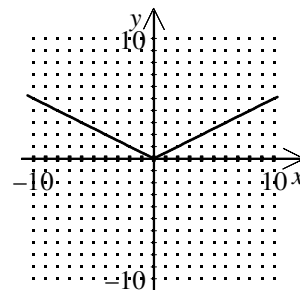
[B]  $f(x) = -2|x|$



[C]  $f(x) = -\frac{1}{2}|x|$



[D]  $f(x) = \frac{1}{2}|x|$



(11.)

12. Given  $f(x) = \frac{8}{x+6}$  and  $g(x) = \frac{6}{x+3}$ , find  $(f-g)(x)$ .

13. Find  $\left(\frac{f}{g}\right)(x)$  for  $f(x) = \frac{1}{x^3}$  and  $g(x) = x$ .

14. Which is the difference quotient of the function  $f(x) = -4x^2 + 5x$ ?

15. Find the difference quotient  $\frac{f(x+\Delta x) - f(x)}{\Delta x}$  for the function.  $f(x) = x^2 - 4x - 1$

16. Find the difference quotient for the function  $f(x) = -x^2 - 4x + 3$ .

17. The position of a moving body is given by the formula  $s = 2t^2 - 3t + 5$  where  $s$  is measured in meters and  $t$  in seconds. Find the average velocity for the time interval from  $t = 3$  to  $t = 5$  seconds.

18. Find  $(g \circ f)(x)$  for the pair of functions.  $f(x) = x + 4$  and  $g(x) = \sqrt{x-7}$ ,  $x \geq 7$

19. Find  $(g \circ f)(x)$  and  $(f \circ g)(x)$  for  $f(x) = x + 5$  and  $g(x) = \sqrt{x-2}$ .

20. If  $f(x) = 5 - 2x$  and  $g(x) = x^2 + 2$ , find (a)  $(f \circ g)(x)$  and (b)  $(g \circ f)(x)$ .

21. For the pair of functions, evaluate  $(g \circ f)(4)$ .  $f(x) = \frac{x+5}{x}$ ,  $g(x) = x^2 - 2$

[1] \_\_\_\_\_

[17] \_\_\_\_\_

[2] \_\_\_\_\_

[18] \_\_\_\_\_

[3] \_\_\_\_\_

[19] \_\_\_\_\_

[4] \_\_\_\_\_

[20] \_\_\_\_\_

[5] \_\_\_\_\_

[21] \_\_\_\_\_

[6] \_\_\_\_\_

[7] \_\_\_\_\_

[8] \_\_\_\_\_

[9] \_\_\_\_\_

[10] \_\_\_\_\_

[11] \_\_\_\_\_

[12] \_\_\_\_\_

[13] \_\_\_\_\_

[14] \_\_\_\_\_

[15] \_\_\_\_\_

[16] \_\_\_\_\_

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Reference: <2.5.1.77a>  
[1] \_\_\_\_\_

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Reference: <2.5.1.79a>  
[2] \_\_\_\_\_

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Reference: <2.5.2.81a>  
[3] \_\_\_\_\_

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Reference: <2.5.2.83a>  
[4] [A] \_\_\_\_\_

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Reference: <2.5.2.84a>  
[5] \_\_\_\_\_

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Reference: <2.5.3.85a>  
[6] [D] \_\_\_\_\_

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Reference: <2.5.3.86a>  
[7] \_\_\_\_\_

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Reference: <2.5.3.88a>  
[8] \_\_\_\_\_

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Reference: <2.5.4.89a>  
[9] \_\_\_\_\_

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Reference: <2.5.4.92a>  
[10] \_\_\_\_\_

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Reference: <2.5.5.94a>  
[11] [A] \_\_\_\_\_

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Reference: <2.6.1.97a>  
[12] \_\_\_\_\_

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Reference: <2.6.1.99a>  
[13] \_\_\_\_\_

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Reference: <2.6.2.101a>  
[14] \_\_\_\_\_

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Reference: <2.6.2.102a>  
[15] \_\_\_\_\_

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Reference: <2.6.2.103a>  
[16] \_\_\_\_\_

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Reference: <2.6.2.104a>  
[17] \_\_\_\_\_

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Reference: <2.6.3.105a>  
[18] \_\_\_\_\_

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Reference: <2.6.3.106a>  
[19] \_\_\_\_\_

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Reference: <2.6.3.107a>  
[20] \_\_\_\_\_

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Reference: <2.6.3.108a>  
[21] \_\_\_\_\_