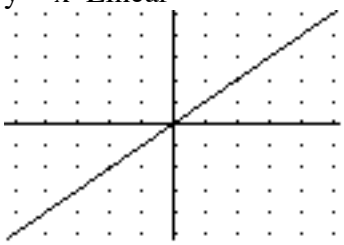
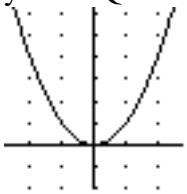
Parent Functions:

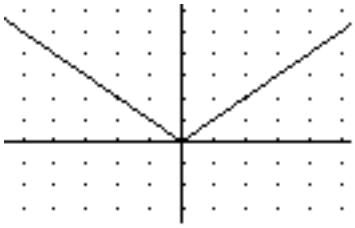
1. $y = x$ Linear



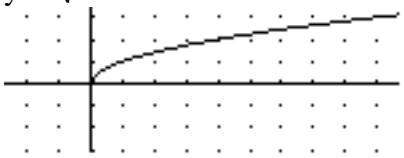
2. $y = x^2$ Quadratic



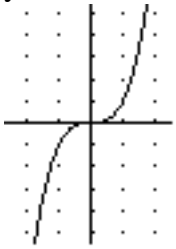
3. $y = |x|$ Absolute Value



4. $y = \sqrt{x}$ Radical

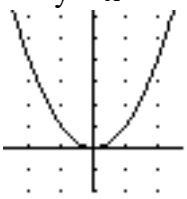


5. $y = x^3$ Cubic

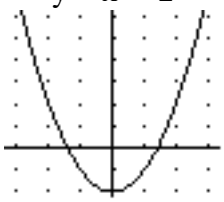


6. Adding to or Subtracting from the entire function will RAISE or LOWER the graph.

$y = x^2$

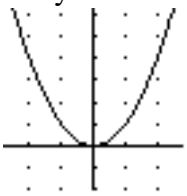


$y = x^2 - 2$

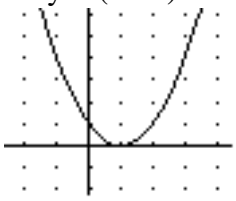


7. Adding to or Subtracting from all x-values will SHIFT the graph RIGHT or LEFT.

$y = x^2$

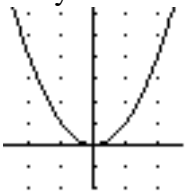


$y = (x - 1)^2$

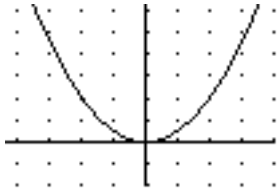


8. Multiplying a function by a positive constant >1 or a positive constant < 1 will vertically STRETCH or COMPRESS the graph.

$y = x^2$

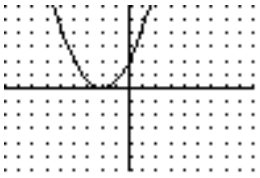


$y = \frac{1}{2} x^2$

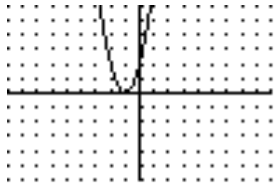


9. Multiplying all x-values by a constant >1 or a positive constant <1 will horizontally COMPRESS or STRETCH the graph

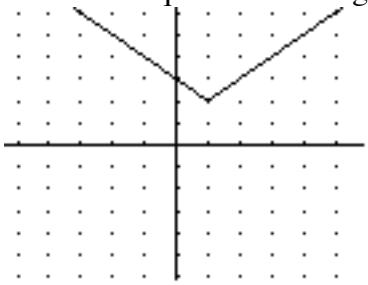
$y = \frac{1}{2}x^2 + 2x + 2$



$y = \frac{1}{2}(2x)^2 + 2(2x) + 2$

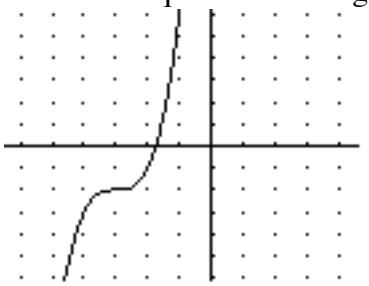


10. Find the equation for the graph.



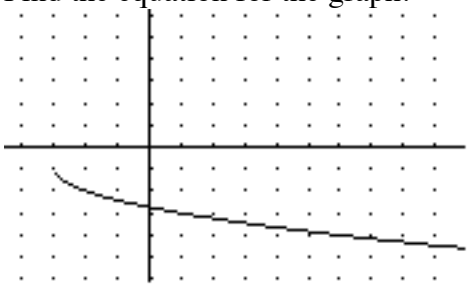
$y = |x - 1| + 2$

11 Find the equation for the graph.



$y = (x + 3)^3 - 2$

12. Find the equation for the graph.

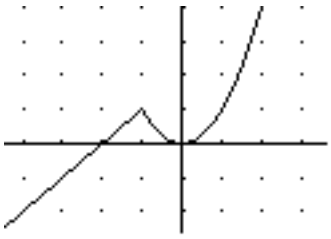


$y = -\sqrt{x + 3} - 1$

13. $f(x) = |x|$. Demonstrate that f(x) is either and even, odd, or neither kind of function.

$f(-x) = |-x| = |x|$. Therfore f is an even function.

14. Draw the graph of $f(x) = \begin{cases} x + 2 & \text{if } x \le -1 \\ x^2 & \text{if } x > 1 \end{cases}$



15. $g(x) = \dfrac{\sqrt{7 - x}}{x + 1}$ Write the interval for the domain.

$(-\infty, -1)$ & $(-1, 7]$

16. Define Function.

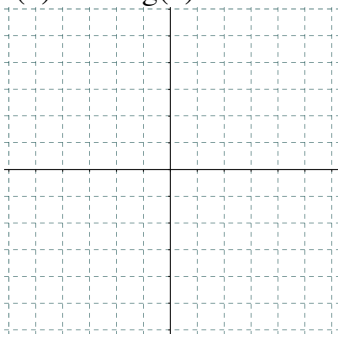
A Relation where each Domain Element is paired to Exactly One Range Element.

Assignment: Page 48, #'s 1, 4, 10, 15, 17, 18, 19, 20, 24, 26, 27, 29, 31, 36

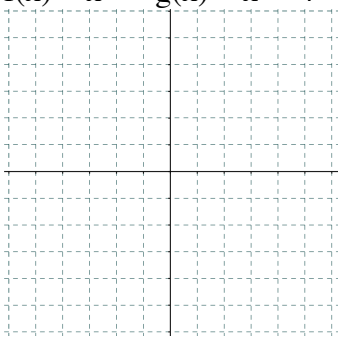
Assignment 105 Page 48, #'s 1, 4, 10, 15, 17, 18, 19, 20, 24, 26, 27, 29, 31, 36

Exer. 1-12: Sketch the graphs of the three functions by hand on the same rectangular coordinate system. Verify your result with a graphing utility.

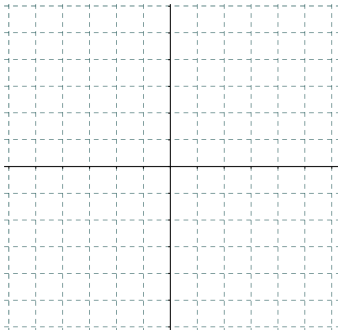
1. $f(x) = x$ $g(x) = x - 4$ $h(x) = 3x$



4. $f(x) = x^2$ $g(x) = x^2 - 4$ $h(x) = (x + 2)^2 + 1$

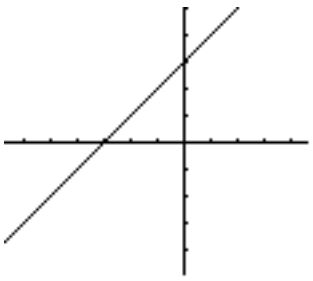


10. $f(x) = |x|$ $g(x) = |x + 3|$ $h(x) = -2|x + 2| - 1$

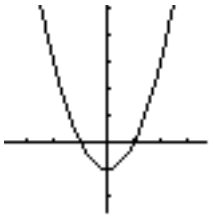


Exer. 12-20: Identify the parent function and describe the transformation shown in the graph. Write an equation for the graphed function.

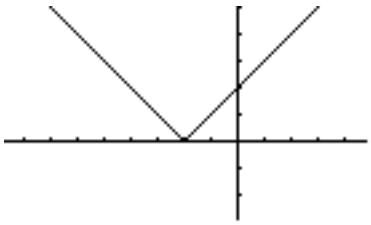
15.



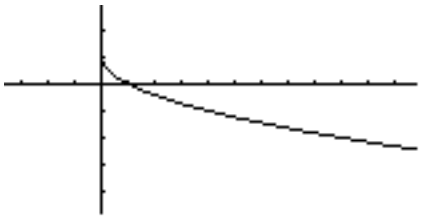
17.



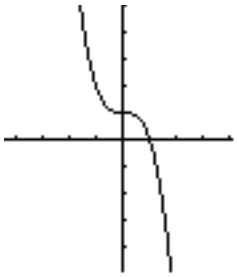
18.



19.



20.



Exer. 21-26: Compare the graph of the function with the graph of $f(x) = \sqrt{x}$ .

24. $y = \sqrt{x + 4}$

26. $y = \sqrt{-x + 3}$

Exer. 27-32: Compare the graph of the function with the graph of $f(x) = |x|$.

27. $y = |x + 5|$

29. $y = -|x|$

31. $y = 4|x|$

Exer. 33-38: Compare the graph of the function with the graph of $f(x) = x^3$.

36. $h(x) = -2(x - 1)^3 + 3$