

Key

### Functions Test Review

Use the following information to answer each of the following questions.

$f(x) = x^2 - 3x + 2$  and  $g(x) = 2x + 4$

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

$x^2 - x + 6$

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

$x^2 - 5x - 2$

3.  $(f \cdot g)(x)$

$2x^3 - 2x^2 - 8x + 8$

4.  $(\frac{f}{g})(x)$

$\frac{x^2 - 3x + 2}{2x + 4}$

$x \neq -2$

5.  $[g \circ f](x)$

$2x^2 - 6x + 8$

6.  $[g \circ f](2)$

4

7.  $g[f(-3)]$

44

8.  $g[f(4)]$

16

Use the following information to answer each of the following questions.

$f(x) = 2x - 3$  and  $g(x) = 4x + 5$

9.  $(f + g)(x)$

$6x + 2$

10.  $(f - g)(x)$

$-2x - 8$

11.  $(f \cdot g)(x)$

$8x^2 - 2x - 15$

12.  $(\frac{f}{g})(x)$

$\frac{2x - 3}{4x + 5}$

$x \neq -\frac{5}{4}$

13.  $[g \circ f](x)$

$8x - 7$

14.  $[g \circ f](2)$

9

15.  $g[f(-3)]$

-31

16.  $g[f(4)]$

25

Find the inverse of each relation.

17.  $\{(0, 4), (5, -2), (-7, 9), (1, -3)\}$

$(4, 0) (-2, 5) (9, -7) (-3, 1)$

18.  $\{(1, -2), (3, 4), (-5, 6), (7, -8)\}$

$(-2, 1) (4, 3) (6, -5) (-8, 7)$

Find the inverse of each function. The graph the function and its inverse.

19.  $f(x) = 4x - 2$

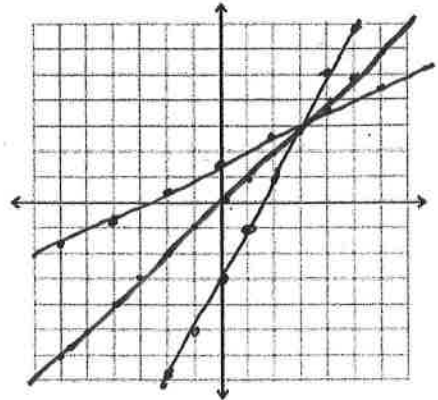
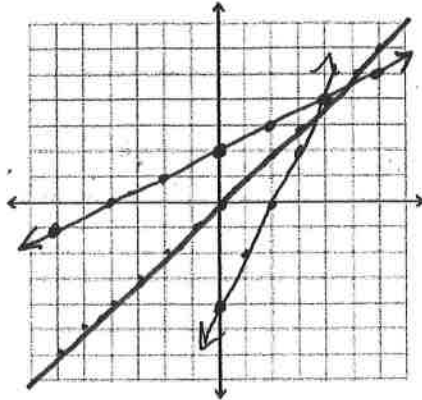
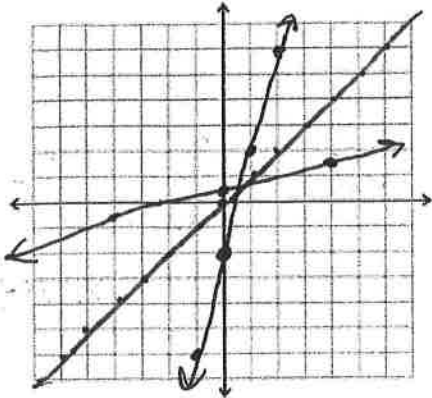
$f^{-1}(x) = \frac{1}{4}x + \frac{1}{2}$

20.  $g(x) = \frac{1}{2}x + 2$

$g^{-1}(x) = 2x - 4$

21.  $y = 2x - 3$

$Y^{-1} = \frac{1}{2}x + 1.5$



Determine whether each pair of functions are inverse functions.

22.  $f(x) = 2x + 3$

$g(x) = 3x + 2$

no

23.  $f(x) = 2x - 8$

$g(x) = \frac{1}{2}x + 4$

yes

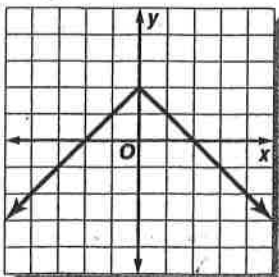
24.  $f(x) = 4x - \frac{1}{2}$

$g(x) = \frac{1}{4}x + \frac{1}{8}$

yes

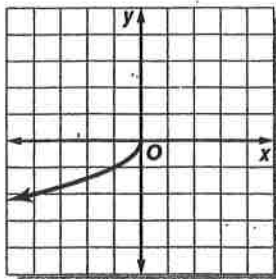
Identify the following graphs as square root, quadratic, absolute value, rational, greatest integer, constant or identity.

25.



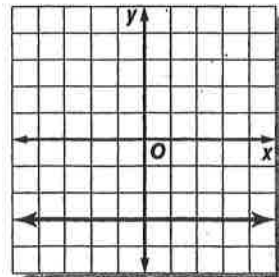
Absolute Value

26.



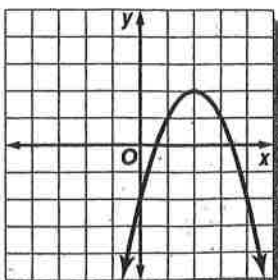
Square Root

27.



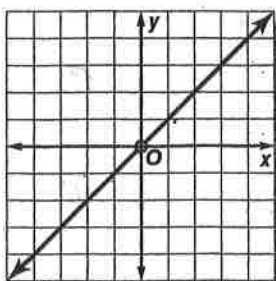
Constant

28.



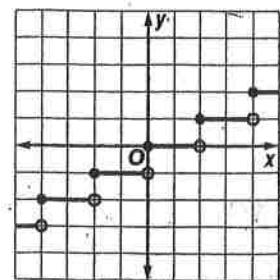
Quadratic

29.



rational (w/ hole)  
identity (w/o hole)

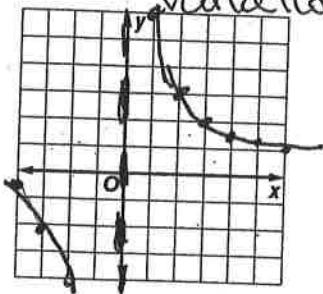
30.



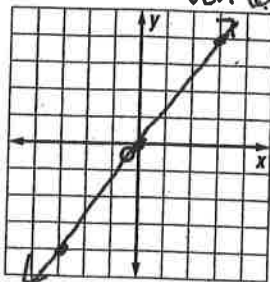
Greatest Integer

Graph and identify the function represented by each equation. Make sure to draw all asymptotes & holes. Find the domain & range.

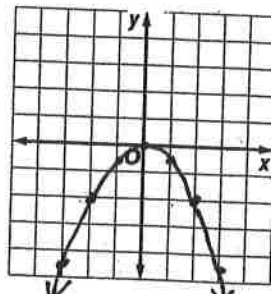
31.  $y = \frac{6}{x}$  Inverse Variation



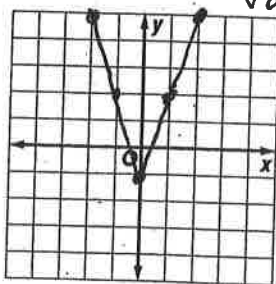
32.  $y = \frac{4}{3}x$  Direct Variation



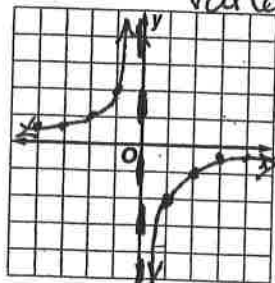
33.  $y = -\frac{x^2}{2}$  Quadratic



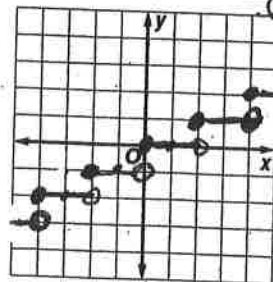
34.  $y = |3x| - 1$  Abs. Value



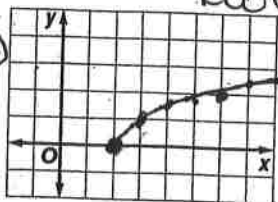
35.  $y = -\frac{2}{x}$  Inverse Variation



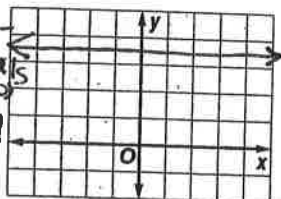
36.  $y = \left\lfloor \frac{x}{2} \right\rfloor$  Greatest Integer



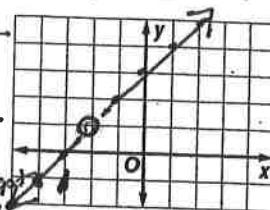
37.  $y = \sqrt{x-2}$  Square Roots



38.  $y = 3.2$  Constant



39.  $y = \frac{x^2 + 5x + 6}{x + 2}$  Rational



Hole  $x = -2$

D:  $x \geq 2$   $[2, \infty)$   
R:  $y \geq 0$   $[0, \infty)$

D: all reals  $(-\infty, \infty)$   
R:  $[3.2, \infty)$

D: all reals except -2  
R: all reals except 1

1) D: all reals except 0  $(-\infty, 0) \cup (0, \infty)$   
R: all reals except 0  $(-\infty, 0) \cup (0, \infty)$

33) D: all reals  $(-\infty, \infty)$   
R:  $y \leq 0$   $(-\infty, 0]$

35) D: all reals except 0  $(-\infty, 0) \cup (0, \infty)$   
R: all reals except 0  $(-\infty, 0) \cup (0, \infty)$

2) D: all reals  $(-\infty, \infty)$   
R: all reals  $(-\infty, \infty)$

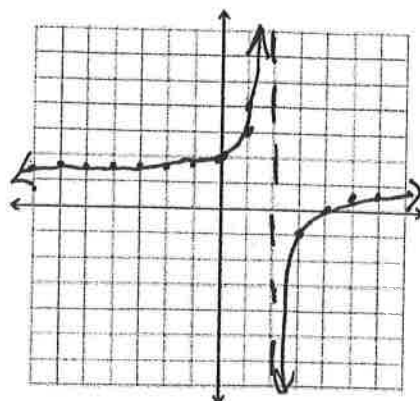
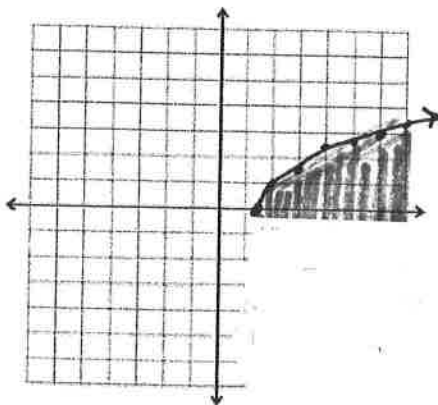
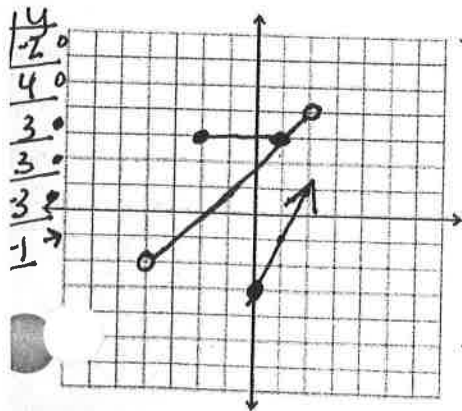
40.  $f(x) = \begin{cases} x+2 & \text{if } -4 < x < 2 \\ 3 & \text{if } -2 \leq x \leq 1 \\ 2x-3 & \text{if } x \geq 0 \end{cases}$

34) D: all reals  $(-\infty, \infty)$   
R:  $y \geq -1$   $[-1, \infty)$

36) D: all reals  
R: all integers

41.  $y \leq \sqrt{2x-3}$

42.  $f(x) = \frac{x-4}{x-2}$



4  
-2  
4  
3  
3  
3  
-1