

#4 Review for Test 1.1 Review of Algebra 2 **NO CALCULATOR**

A) Determine if the relation is a function or not and B) Give the Domain and Range in interval notation.

1.

x	-2	-1	0	1
y	3	4	6	4

Function? Yes or No
 D: $\{-2, -1, 0, 1\}$
 R: $\{3, 4, 6\}$

2.

Function? Yes or No
 D: $(-\infty, -2] \cup [2, \infty)$
 R: $(-\infty, \infty)$

3.

Function? Yes or No
 D: $(-\infty, \infty)$
 R: $[-5, 1]$

Graph each using transformation of parent functions, show at least 3 points. Give the Domain and Range.

4. $f(x) = -3x + 2$

D: \mathbb{R} R: \mathbb{R}

5. $f(x) = (x-3)^2 - 2$

D: \mathbb{R} R: $y \geq -2$

6. $f(x) = -|3x| + 4$

D: \mathbb{R} R: $(-\infty, 4]$

7. $f(x) = -2\sqrt{x+3} - 1$

D: $[-3, \infty)$ R: $(-\infty, -1]$

8. $f(x) = \sqrt{-(x-2)} - 3$

D: $(-\infty, 2]$ R: $[-3, \infty)$

9. $f(x) = \frac{1}{2}x^3 - 4$

D: $(-\infty, \infty)$ R: $(-\infty, \infty)$

Write a possible equation for each:

10.

$f(x) = -(x+3)^2 - 1$

11.

$f(x) = 2|x-2| + 3$

12.

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

13.

$f(x) = 2 \lfloor \frac{1}{3}x \rfloor$

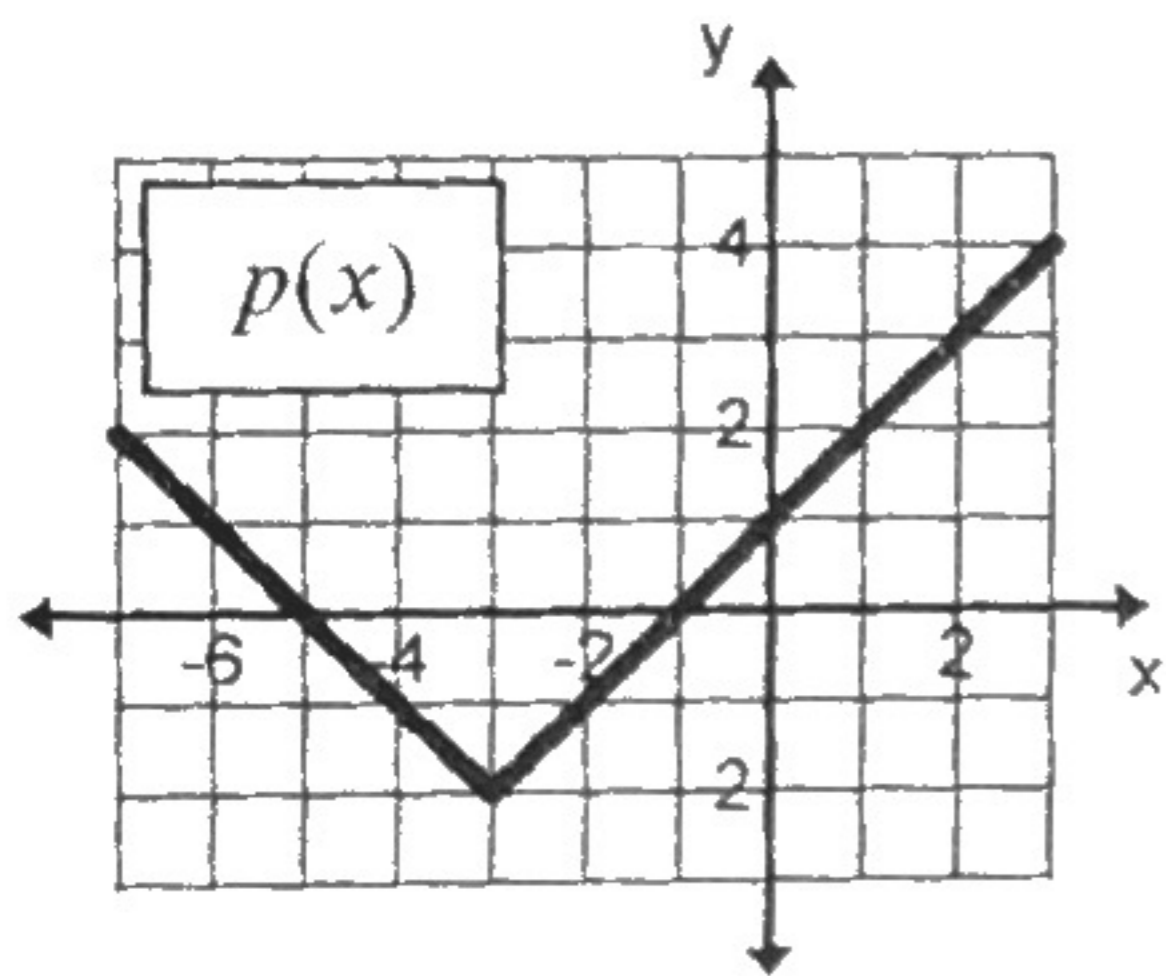
Using the given functions, evaluate the following...

$$f(x) = 3 - x^2$$

$$g(x) = [x - 2]$$

$$j(x) = 5x - 2$$

$$h(x) = \begin{cases} [x] - 4, & x < -1 \\ -3x, & -1 \leq x \leq 1 \\ (x+1)^2, & x > 1 \end{cases}$$



$$14. g(-2.7) = [-2.7 - 2] = [-4.7] = -5$$

$$15. p(1) = 2$$

$$16. h(-1) = -3(-1) = 3$$

$$17. f(-5) = 3 - (-5)^2 = 3 - 25 = -22$$

$$18. [j(x)]^2 = (5x - 2)^2 = 25x^2 - 20x + 4$$

$$19. f(x) - j(x) = (3 - x^2) - (5x - 2) = 3 - x^2 - 5x + 2 = -x^2 - 5x + 5$$

$$20. f(j(x)) = f(5x - 2) = 3 - (5x - 2)^2 = 3 - (25x^2 - 10x + 4) = -25x^2 + 10x - 1$$

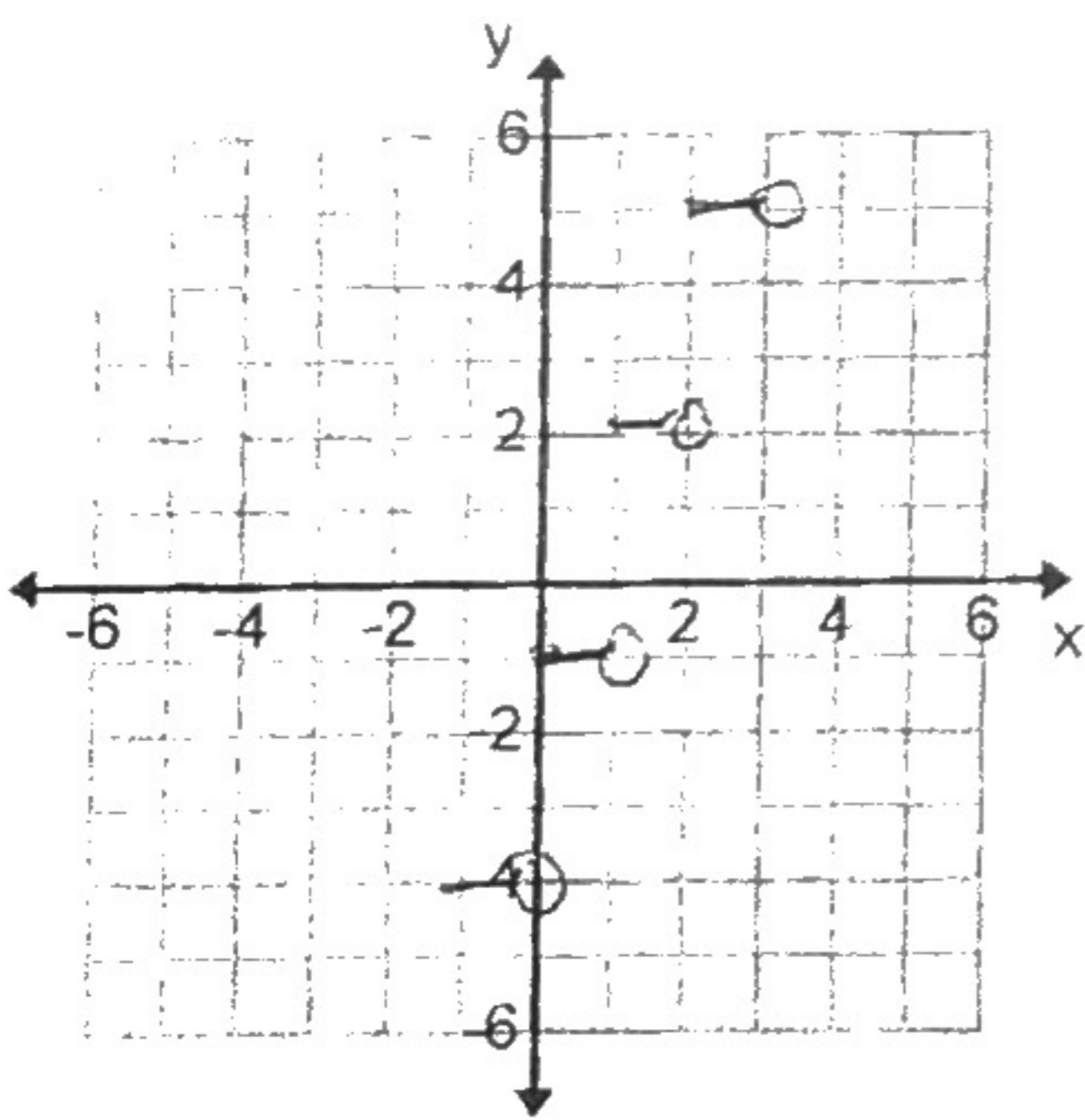
$$21. j(j(x)) = j(5x - 2) = 5(5x - 2) - 2 = 25x - 10 - 2 = 25x - 12$$

$$22. \text{Find the inverse of } j(x). \\ y = 5x - 2 \\ x = \frac{y + 2}{5} \\ j^{-1}(x) = \frac{x + 2}{5}$$

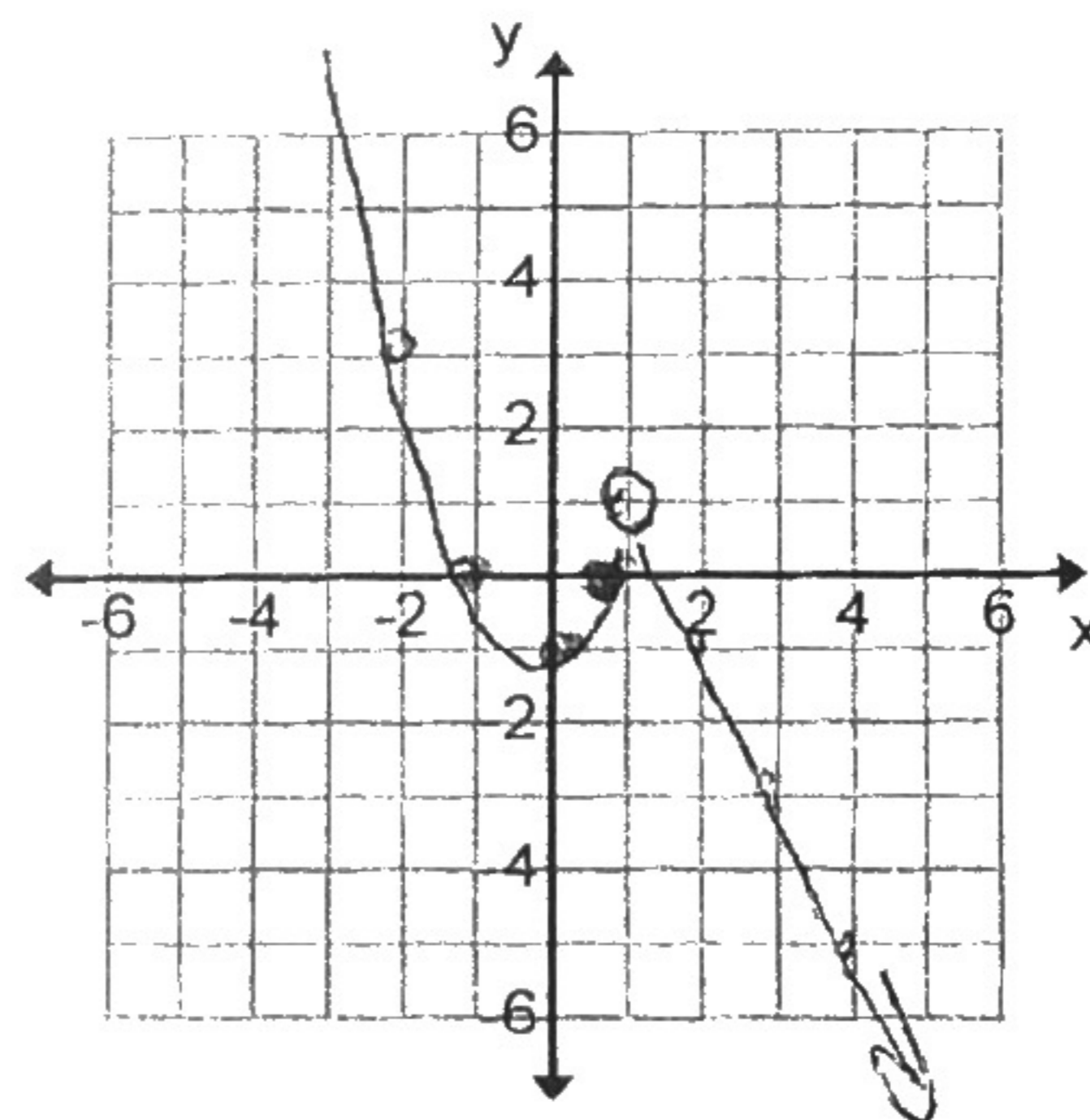
$$23. \text{Find the inverse of } f(x). \\ y = 3 - x^2 \\ x^2 = 3 - y \\ x = \pm\sqrt{3 - y} \\ y = 3 - x^2 \\ x = 3 - y^2 \\ y = \pm\sqrt{3 - x}$$

Graph the following WITHOUT the calculator.

$$24. f(x) = 3[x] - 1$$



$$25. f(x) = \begin{cases} x^2 - 1, & x \leq 1 \\ -2x + 3, & x > 1 \end{cases}$$



Solve each equation. Show all work.

$$26. 8x - 5 = 3x + 4$$

$$5x = 9 \\ x = 9/5$$

$$27. 2(x+1) - 3(x+4) = 3x + 2$$

$$2x + 2 - 3x - 12 = 3x + 2 \\ -x - 10 = 3x + 2 \\ -12 = 4x \\ -3 = x$$

$$28. x^2 + 11x + 30 = 0$$

$$(x+5)(x+6) = 0 \\ x = -5 \text{ or } x = -6$$

$$29. x^2 + x - 20 = 0$$

$$(x+5)(x-4) = 0$$

$$x = -5 \text{ or } x = 4$$

$$30. 2x^2 - x - 6 = 0$$

$$(2x+3)(x-2) = 0 \\ 2x+3=0 \text{ or } x-2=0 \\ x = -3/2 \text{ or } x = 2$$

$$31. 12x^2 - 5x - 2 = 0$$

$$(4x+1)(3x-2) = 0$$

$$x = -1/4 \text{ or } x = 2/3$$

$$32. x^2 - 9x = 0$$

$$x(x-9) = 0$$

$$x = 0 \text{ or } x = 9$$

$$33. (x+3)^2 - 5 = 0$$

$$(x+3)^2 = 5$$

$$x+3 = \pm\sqrt{5}$$

$$x = -3 \pm \sqrt{5}$$

$$34. x^3 + 3x^2 - 7x + 21 = 0$$

$$x^2(x+3) - 7(x+3) = 0$$

$$(x+3)(x^2 - 7) = 0$$

$$x = -3 \text{ or } x = \pm\sqrt{7}$$