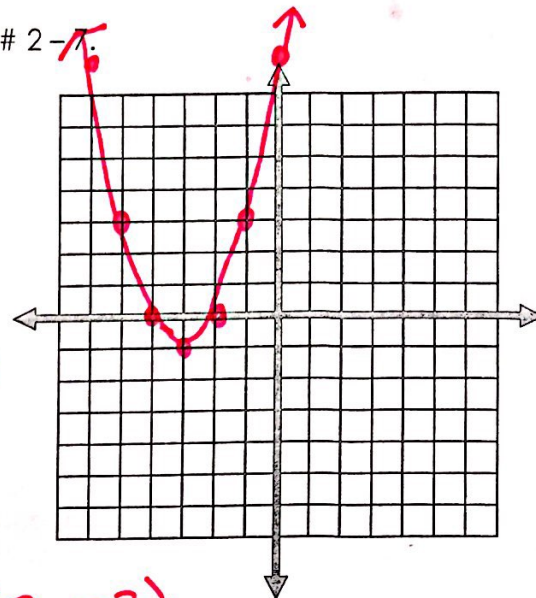


Review Worksheet for Unit 3B Test

Name KEY Date _____

1) Graph $h(x) = x^2 + 6x + 8$ and use this function to complete # 2-7:



2) What is the Vertex & AOS?

$V: (-3, -1)$ $X = -3$

3) What are the Domain and Range?

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

4) What are the X-Intercepts?

$(-2, 0)$ $(-4, 0)$

5) What is the Interval of Increase? Interval of Decrease?

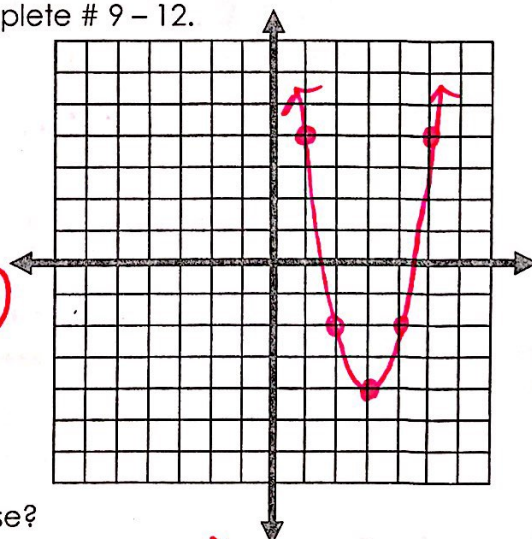
$IOI: (-3, \infty)$ $IOD: (-\infty, -3)$

6) End Behavior: As $x \rightarrow \infty, y \rightarrow \infty$

As $x \rightarrow -\infty, y \rightarrow \infty$

7) Average Rate of Change over $-2 \leq x \leq 0$ **4**

8) Graph $f(x) = 2(x - 3)^2 - 4$ and use this function to complete # 9-12.



9) What is the Vertex & AOS?

$V: (3, -4)$ $AOS: X = 3$

10) What is the Domain and Range?

$D: (-\infty, \infty)$ $R: [-4, \infty)$

11) What is the Y-Intercept?

$(0, 14)$

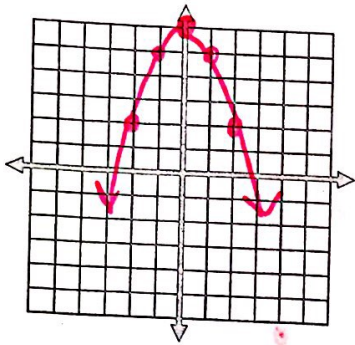
12) What is the Interval of Increase? Interval of Decrease?

$IOI: (3, \infty)$ $IOD: (-\infty, 3)$

13) Average Rate of Change over $0 \leq x \leq 2$

-8

14) Graph: $r(x) = -x^2 + 6$



Domain: $(-\infty, \infty)$

Range: $(-\infty, 6]$

Vertex: $(0, 6)$

Axis of Symmetry: $x = 0$

X-Intercepts: $(2.45, 0)$ $(-2.45, 0)$

Y-Intercept: $(0, 6)$

Interval of Increase: $(-\infty, 0)$

Interval of Decrease: $(0, \infty)$

End Behavior: As $x \rightarrow \infty$, $y \rightarrow -\infty$
As $x \rightarrow -\infty$, $y \rightarrow -\infty$

Name the transformations by comparing each function to $f(x) = x^2$.

15) $g(x) = 3(x-1)^2$

16) $h(x) = -x^2 + 4$

17) $q(x) = (x+2)^2 - 5$

• Stretch 3

• Right 1

• Reflection

• up 4

• left 2

• down 5

Write the equation in vertex form that has been...

18) Shifted to the right 3 units and down 8 units

$$y = (x-3)^2 - 8$$

19) Reflected over the x-axis and shrunk vertically by a scale factor of $\frac{1}{2}$

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

20) Reflected over the x-axis and shifted left 9 units

$$y = -(x+9)^2$$

21) Vertically stretched by a scale factor of 5 and shifted up 10 units

$$y = 5x^2 + 10$$

Write the equation in Standard Form.

22. $y = 4(x-1)^2 - 3$

$$y = 4x^2 - 8x + 1$$

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

$$f(x) = -2x^2 - 12x - 13$$

Write the equation in Vertex Form.

24. $g(x) = -x^2 + 6x - 9$

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

25. $y = 6x^2 + 24x - 5$

$$y = (x+2)^2 - 29$$

Decide whether the ordered pair is a solution of the inequality.

26. $y < x^2 + 9x; (-3, 10)$

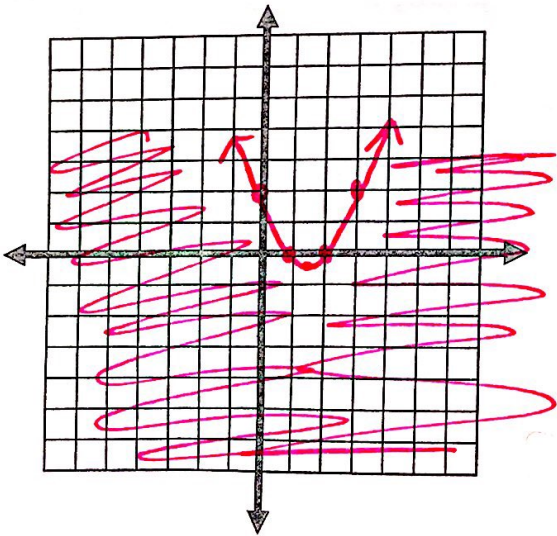
Not a
Solution

27. $y \geq x^2 - 13x; (-1, 14)$

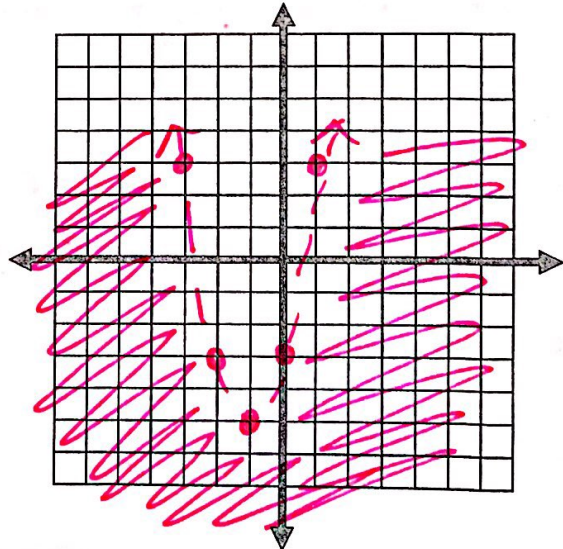
Solution

Graph the inequality.

28. $y \leq x^2 - 3x + 2$



29. $y < 2x^2 + 4x - 3$



Word Problems.

A ball is shot from a cannon into the air with an upward velocity of 40 feet per second. The equation for the height (h) of the ball at any time (t) is given by $h(t) = -16t^2 + 40t + 1.5$.

30. How long did it take the ball to reach its maximum height?

1.25 seconds

31. What is the maximum height that the ball reached?

26.5 feet

32. When does the ball reach the ground?

$t = 2.54$ seconds

A rock is thrown vertically into the air and has the equation of motion:

$$h(t) = -16t^2 + 32t + 48.$$

33. How high is the rock at $t = 0$, which is right before it is thrown?

48 feet

34. How long does it take the rock to get to its maximum height?

1 second

35. How high above the starting point does the rock begin to change direction?

16 feet above the starting point.

36. When does the ball hit the ground?

3 seconds.