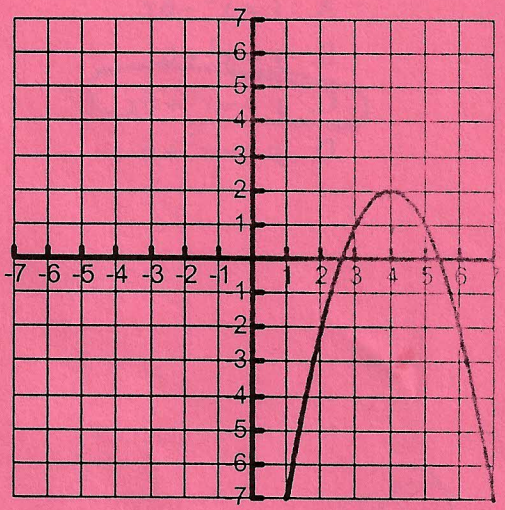
Name: Key **Date:** **Period:**

Day 3 of 4

31. Identify the vertex of the parabola shown in the graph, and tell whether it is a maximum or a minimum.



Vertex: (4, 2)

maximum

32. Which of the following functions creates the **widest** parabola?

A. $y = 3x^2$

B. $y = x^2$

C. $y = \frac{1}{3}x^2$

33. Calculate the coordinates of the vertex of $y = x^2 - 6x - 3$?

axis of Symmetry $x = \frac{-b}{2a}$

$x = \frac{-(-6)}{2(1)} = \frac{6}{2} = 3$

$y = (3)^2 - 6(3) - 3$

$= 9 - 18 - 3$

$= -12$

Vertex: $(3, -12)$

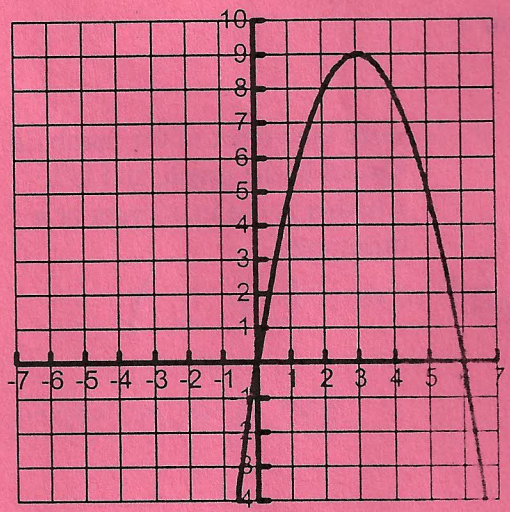
34. Which of the functions below creates the graph at the right?

A. $y = x^2 - 6x$

B. $y = x^2 + 6x$

C. $y = -x^2 + 6x$

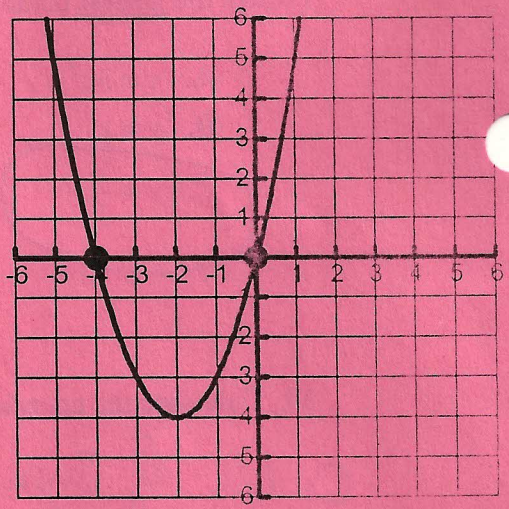
D. $y = -x^2 + 6$



35. What are the solutions to the graph below?

$x = -4$

$x = 0$



36. Calculate all of the real solutions of $3x^2 - 243 = 0$?

$3(x^2 - 81) = 0$

$3(x+9)(x-9) = 0$

$x+9=0$ or $x-9=0$

$x = 9$ or $x = -9$

37. What are the solutions of $(x-4)(2x+16) = 0$?

$x-4=0$ And $2x+16=0$

$x = 4$ or $2x = -16$

$x = -8$

38. Find all of the real solutions of $x^2 + 10x + 24 = 0$.

$(x+6)(x+4)=0$

$x=-6$ or $x=-4$

39. If you were going to solve the quadratic equation $a^2 + 6a = 13$ using the completing the square method, what value would you need to add to both sides of the equation in order to create a perfect square trinomial?

9

40. Solve the quadratic equation $x^2 - 10x + 16 = 0$ using the completing the square method; round your answers to the nearest hundredth.

See back!

$x=8$ or $x=2$

41. The expression $\dfrac{8 \pm \sqrt{(-8)^2 - 4(2)(-4)}}{2(2)}$ uses the quadratic formula to find solutions.

Write a quadratic equation to match the data above

$a=2$
$b=-8$
$c=-4$

$2x^2 - 8x - 4 = 0$

42. Solve $5x^2 - 4x - 3 = 0$ using the quadratic formula.

$a=5$
$b=-4$
$c=-3$

$$= \frac{-(-4) \pm \sqrt{(-4)^2 - 4(5)(-3)}}{2(5)}$$

$$= \frac{4 \pm \sqrt{16+60}}{10}$$

$$= \frac{4 \pm \sqrt{76}}{10}$$

$$= \frac{4+\sqrt{76}}{10} \text{ or } \frac{4-\sqrt{76}}{10}$$

$= 1.27$ or -0.47

43. Write an equation that best models the data in the table on the right?

x	y
0	2
1	3
2	6
3	11
4	18

$y = x^2 + 2$

$x^2 - 10x + 16 = 0$

$x^2 - 10x = -16$

$x^2 - 10x + 25 = 9$

$(x-5)^2 = 9$

$x - 5 = \pm 3$

$x - 5 = 3$ or $x - 5 = -3$

$+5 \quad +5$ $\quad$ $+5 \quad +5$

$x = 8$ or $x = 2$