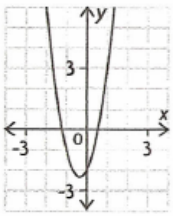
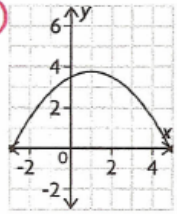
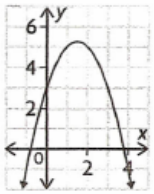
SOLUTIONS ⇒ CHAPTER 6 - CHAPTER TEST

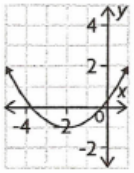
MULTIPLE CHOICE

1. Which parabola corresponds to the greatest value of c, the constant coefficient in the function $y = ax^2 + bx + c$?

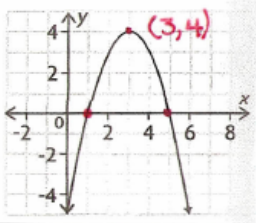
A. 

(B.) 

C. 

D. 

2. Which of these equations represents the parabola shown?



A. $y = -x(x - 5) + 1$

(C.) $y = -x^2 + 6x - 5$

B. $y = -x^2 - 6x + 5$

D. $y = -(x - 5)^2 + 1$

$y = a(x-r)(x-s)$
$y = -(x-1)(x-5)$
$y = -(x^2-5x-1x+5)$
$y = -(x^2-6x+5)$
$y = -x^2+6x-5$

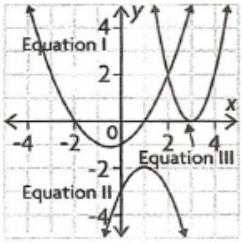
3. What is the vertex of $f(x) = -0.5(x + 4)^2 - 2$? Vertex $(-4,-2)$

A. $(4, -2)$ B. $(-2, -4)$ C. $(2, -4)$ (D.) $(-4, -2)$

5. Which equation is a quadratic equation in standard form?

A. $-3x^3 + 2x - 5 = 0$ B. $2x^2 - 5x = 15$ C. $f(x) = 2x^2 + 3x - 5$ D. $4x^2 - 6x + 5 = 0$

6. Select the one correct statement about the quadratic equations corresponding to these graphs.



A. Equation I has no solution.

B. Equations I and III each have at least one real solution.

C. Each equation has at least one real solution.

D. Equation II has two solutions.

8. Which of the following are roots of $x^2 - 9x - 52 = 0$?

A M
↳ $x^2-9x-52=0$
$(x-13)(x+4)=0$
$x-13=0$ or $x+4=0$
$x=13$ $x=-4$

$a=1$ $b=-9$ $c=-52$

$x = \frac{-(-9) \pm \sqrt{(-9)^2-4(1)(-52)}}{2(1)}$

$x = \frac{9 \pm \sqrt{81+208}}{2} = \frac{9 \pm \sqrt{289}}{2}$

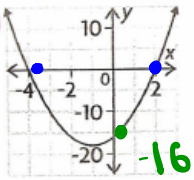
$= \frac{9 \pm 17}{2}$

$= \frac{26}{2} = 13$ | $\frac{-8}{2} = -4$

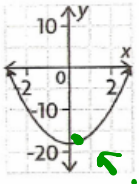
A. $x = -4$ and $x = -13$
C. $x = -4$ and $x = 13$
B. $x = 4$ and $x = -13$
D. $x = 4$ and $x = 13$

10. Which parabola corresponds to the quadratic function $y = 2x^2 + 4x - 16$?

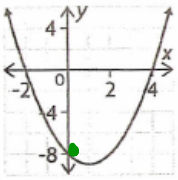
↳ $y = x^2+2x-8$
$0=x^2+2x-8$
$0=(x+4)(x-2)$
$x+4=0$ or $x-2=0$
$x=-4$ $x=2$

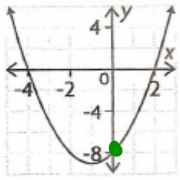
A.


-16

B.


-17.5

C.


D.


12. Use the quadratic formula to determine which of the following are roots of the equation $4.4x^2 + 4.3x - 5 = 0$.

$a=4.4,\ b=4.3,\ c=-5$

$$x = \frac{-b \pm \sqrt{b^2-4ac}}{2a}$$

$$x = \frac{-4.3 \pm \sqrt{(4.3)^2-4(4.4)(-5)}}{2(4.4)}$$

$$x = \frac{-4.3 \pm \sqrt{18.49+88}}{8.8}$$

$$x = \frac{-4.3 \pm \sqrt{106.49}}{8.8}$$

$$x = \frac{-4.3 \pm 10.3}{8.8}$$

$$x = \frac{-4.3+10.3}{8.8} \text{ or } x = \frac{-4.3-10.3}{8.8}$$

$$x = 0.68 \qquad x = -1.66$$

A. $x = 0.68$ and $x = 1.66$

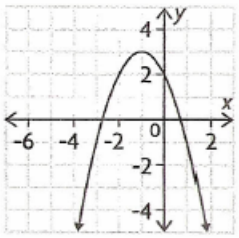
C. $x = 0.68$ and $x = -1.66$

B. $x = -0.68$ and $x = 1.66$

D. $x = -0.68$ and $x = -1.66$

NUMERICAL RESPONSE

13. a) Identify the following information for the parabola shown.



x-intercepts: (-3, 0), (1, 0) y-intercept: (0, 2)

axis of symmetry: $x = -1$ vertex: (-1, 3)

b) What is the range of the function corresponding to this parabola?

range: $\{y \mid y \leq 3, y \in R\}$

14. The roots of $x^2 + 17x - 38 = 0$ are $x =$ -19 and $x =$ 2.

$x^2+17x-38=0$

$(x+19)(x-2)=0$

$x+19=0$ or $x-2=0$

$x=-19$ $x=2$

15. The roots of $x^2 - 2x = 323$ are $x =$ 19 and $x =$ -17.

↳ $x^2-2x-323=0$

$a=1, b=-2, c=-323$

$$x=\frac{-b\pm\sqrt{b^2-4ac}}{2a}$$

$$x=\frac{2\pm\sqrt{(-2)^2-4(1)(-323)}}{2(1)}$$

$$x=\frac{2\pm\sqrt{4+1292}}{2}$$

$$x=\frac{2\pm\sqrt{1296}}{2}$$

$$x=\frac{2\pm 36}{2}$$

$$x=\frac{2+36}{2} \qquad x=\frac{2-36}{2}$$

$$x=\frac{38}{2} \qquad x=\frac{-34}{2}$$

$x=19$ $\qquad$ $x=-17$

A M

$x^2-2x-323=0$

$(x-19)(x+17)=0$

$x-19=0$ | $x+17=0$

$x=19$ | $x=-17$

17. Suppose you were to use the quadratic formula to solve these equations. What values of a, b, and c would you use in each case?

a) $3x^2 - 2x + 1 = 0$

$a = 3$, $b = -2$, $c = 1$

18. Use the quadratic formula to determine the exact roots of each quadratic equation.

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

roots: $x = \frac{-3 \pm \sqrt{65}}{14}$

b) $-4x^2 - 2x + 3 = 0$

roots: $x = \frac{-1 \pm \sqrt{13}}{4}$

$a=7, b=3, c=-2$

$x = \frac{-b \pm \sqrt{b^2-4ac}}{2a}$

$x = \frac{-3 \pm \sqrt{(3)^2-4(7)(-2)}}{2(7)}$

$x = \frac{-3 \pm \sqrt{9+56}}{14}$

$x = \frac{-3 \pm \sqrt{65}}{14}$

$a=-4, b=-2, c=3$

$x = \frac{-b \pm \sqrt{b^2-4ac}}{2a}$

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

$x = \frac{2 \pm \sqrt{4+48}}{-8}$

$x = \frac{2 \pm \sqrt{52}}{-8}$

$x = \frac{2 \pm \sqrt{4 \times 13}}{-8}$

$x = \frac{2 \pm 2\sqrt{13}}{-8}$

$x = \frac{-1 \pm \sqrt{13}}{4}$

23. Write the equation in vertex form of the parabola shown.

$y = a(x-h)^2 + k$

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

$\Rightarrow y = \frac{1}{3}(x+3)^2 - 2$

To determine "a":

$1 = a(-6+3)^2 - 2$

$1 = a(-3)^2 - 2$

$1 = a(9) - 2$

$1 = 9a - 2$

$\frac{3}{9} = \frac{9a}{9}$

$\frac{1}{3} = a$