

1 Solve by extraction of roots.

$$(4x - 1)^2 = 81$$

2 A storage box for sweaters is constructed from a square sheet of corrugated cardboard measuring x inches on a side. The volume of the box, in cubic inches, is

$$V = 20(x - 10)^2$$

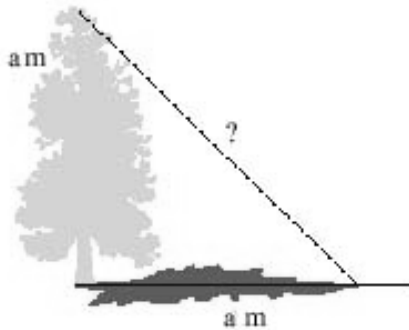
If the box should have a volume of 2880 cubic inches, what size cardboard square is needed?

3 Solve by extracting roots. Give exact values for your answers.

$$7x^2 - 49 = 0$$

a. $x = 49$ b. $x = \pm\sqrt{7}$ c. $x = \pm\frac{\sqrt{49}}{49}$

4 If a 25 – meter pine tree casts a shadow of 25 meters, how far is the tip of the shadow from the top of the tree? (See the picture).



- a. 60.4 meters b. 35.4 meters c. 625.0 meters

5 Solve for x in terms of a .

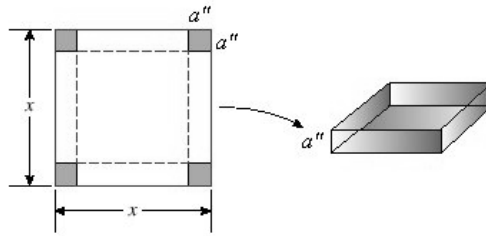
$$(x + a)^2 = 49$$

a. $x = -\sqrt{a} \pm 7$ b. $x = -a \pm 7$ c. $x = -\sqrt{a} + 2a \pm 7$

6 Write the product as a polynomial in simplest form.

$$8x(x - 2)$$

- 7 We are going to make an open box from a square piece of cardboard by cutting a - inch squares from each corner, and then turning up the edges, as shown in the illustration. Let $a = 4$. The following tables show the side of the original sheet of cardboard, the dimensions of the box created from it, and the volume of the box. Which of these tables is correct?



a.

Side	Length of box	Width of box	Height of box	Volume of box
9	1	5	1	5
10	2	6	2	24
11	3	7	3	63
12	4	8	4	128
13	5	9	5	225

c.

Side	Length of box	Width of box	Height of box	Volume of box
9	1	1	4	4
10	2	2	4	16
11	3	3	4	36
12	4	4	4	64
13	5	5	4	100

b.

Side	Length of box	Width of box	Height of box	Volume of box
9	1	1	5	5
10	2	2	6	24
11	3	3	7	63
12	4	4	8	128
13	5	5	9	225

- 8 Factor completely.

$$64t^3 + 100t$$

a. $4t(4t^2 - 5)$

b. $4t(16t^2 + 25)$

c. $4t(4t - 5)(4t + 5)$

d. $4t(4t + 5)^2$

- 9 Use a graphing calculator to graph the following set of equations.

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

$$3(x^2 + 2x - 8) = 0$$

$$0.2(x^2 + 2x - 8) = 0$$

What do you notice about the x - intercepts? Are they the same or different?

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10 A tennis ball is thrown into the air with an initial velocity of 16 feet per second from a height of 8 feet. The value of g is 32. Write and solve an equation to answer the question: At what time is the tennis ball 11 feet high?

11 Graph the equation on a graphing calculator, and use your graph to solve the equation $y = 0$.

$$y = (x - 4)^2$$

a. $x = \frac{1}{4}$

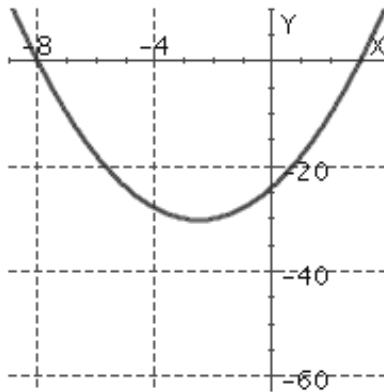
b. $x = -4$

c. $x_1 = -4, x_2 = 4$

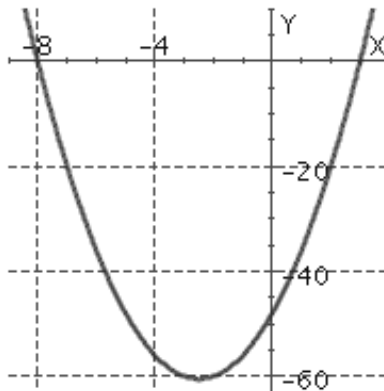
d. $x = 4$

12 Find the x - intercepts of the following graphs.

$$y = x^2 + 5x - 24$$



$$y = 2(x^2 + 5x - 24)$$



a. $x_1 = -8, x_2 = 3$

b. $x_1 = 8, x_2 = -3$

c. $x_1 = -8, x_2 = -3$

d. $x_1 = 8, x_2 = 3$

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13 Write a quadratic equation whose solutions are given. The equation should be in standard form with integer coefficients.

– 8 and 3

a. $x^2 + 8x - 24 = 0$

b. $x^2 + 5x + 3 = 0$

c. $8x^2 + 5x - 24 = 0$

d. $x^2 + 5x - 24 = 0$

14 Graph the equation on a graphing calculator. (Use the ZInteger setting.) Locate the x – intercepts of the graph. Use the x – intercepts to write the quadratic expression in factored form.

$$y = -0.68(x^2 + 3x - 238)$$

a. $y = -0.68(x - 17)(x + 14)$

b. $y = -0.68(x + 17)(x - 14)$

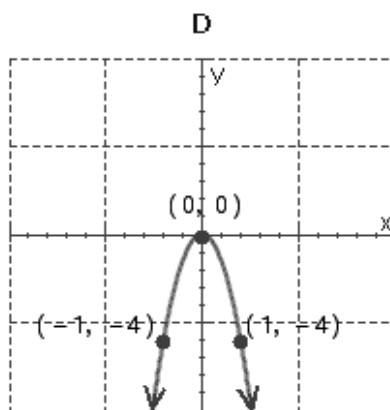
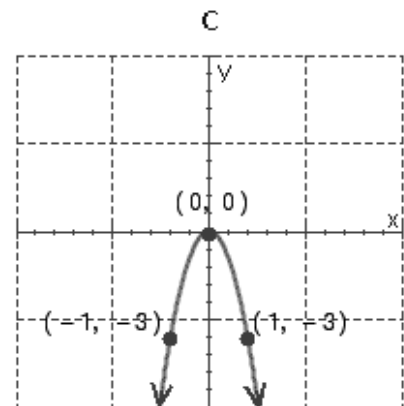
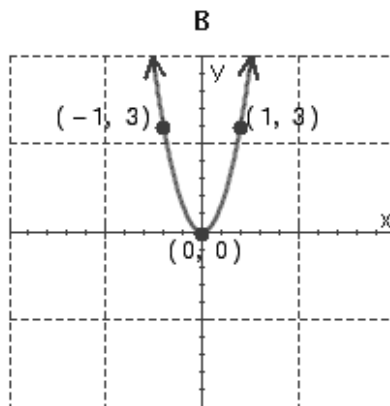
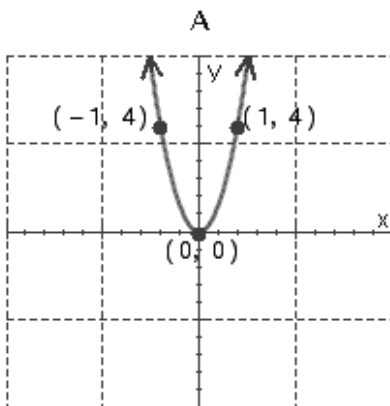
c. $y = 31(x - 0.68)(x + 0.68)$

d. $y = 0.68(x + 17)(x + 14)$

15 Sketch the graph by hand, and label the coordinates of three points on the graph.

$$y = -3x^2$$

Select the label that corresponds to the correct graph.



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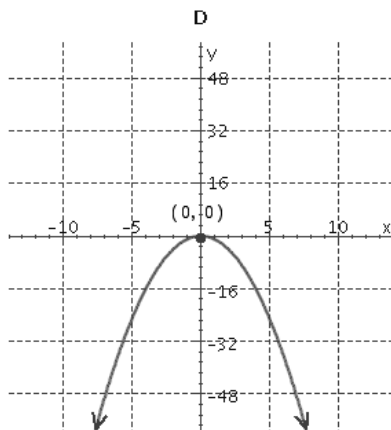
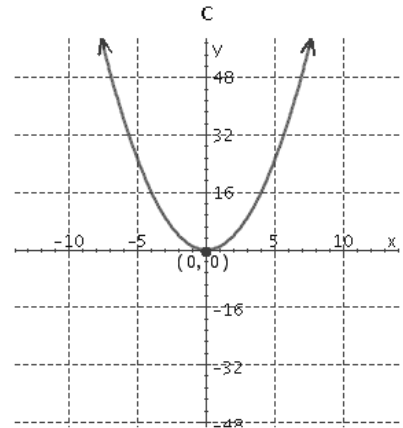
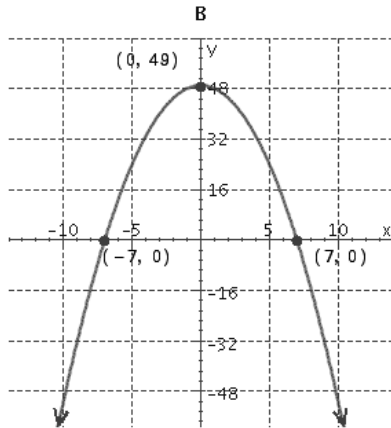
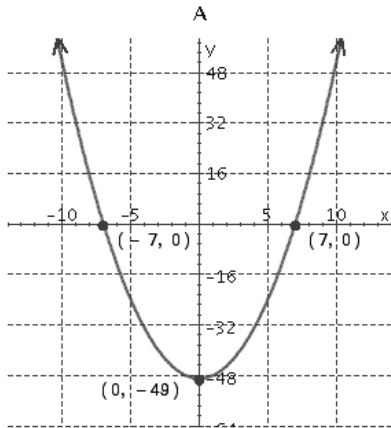
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16 Sketch each graph by hand. Label the vertex and the x -intercepts (if there are any) with their coordinates.

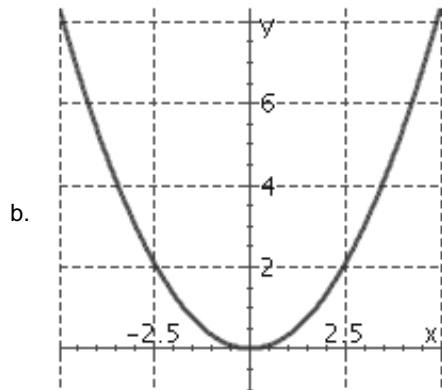
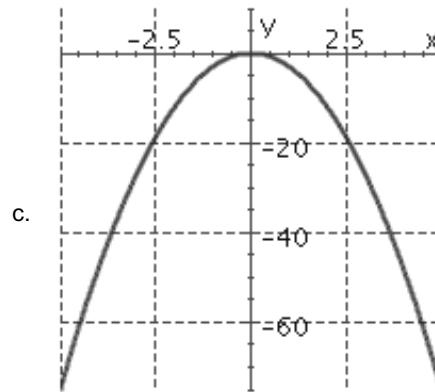
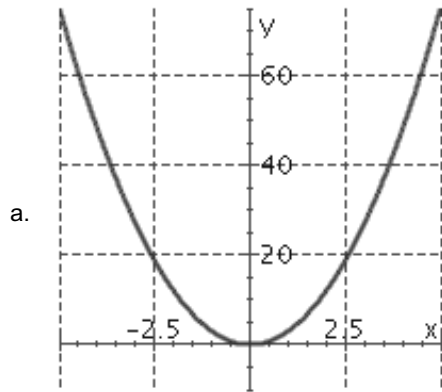
$$y = 49 - x^2$$

Select the label that corresponds to the correct graph.



17 Sketch the graph.

$$y = 3x^2$$



18 Use the discriminant to determine the nature of the solutions of the equation.

$$16x^2 - 712x + 7921 = 0$$

19 In the following problem given one solution of a quadratic equation with rational coefficients, find the other solution.

$$7 + \sqrt{6}$$

a. $x = 7 - \sqrt{6}$

b. $x = \frac{1}{7 + \sqrt{6}}$

c. $x = -7 - \sqrt{6}$

d. $x = -7 + \sqrt{6}$

20 Use the quadratic formula to solve the equation for W .

$$A = 2W^2 + 5LW$$

a. $W = \frac{L \pm \sqrt{(15L)^2 + 8A}}{4}$

c. $W = \frac{5L \pm \sqrt{5L + 8A}}{2}$

b. $W = \frac{-5L \pm \sqrt{5L - 16A}}{4}$

d. $W = \frac{-5L \pm \sqrt{(5L)^2 + 8A}}{4}$

ANSWER KEY

Rch3

- | | | | | | | |
|---------------------|---------|----------------------|-------------------------|-------|-----------------|-------|
| 1. $\frac{2.5}{-2}$ | 2. 22 | 3. b | 4. b | 5. b | 6. $8x^2 - 16x$ | 7. c |
| 8. b | 9. same | 10. $t=0.75, t=0.25$ | 11. d | 12. a | 13. d | 14. b |
| 15. C | 16. B | 17. a | 18. one, repeated, real | 19. a | 20. d | |