Chapter 8 Date:_____, Section: _____ Name_____

Solve.

1) $x^2 + 2 = 227$ 1) _____

2) $5x^2 = 65$ 2) _____

3) $(x - 2)^2 = 36$ 3) _____

4) $(x + 5)^2 = 44$ 4) _____

5) $(x + 9)^2 - 6 = 0$ 5) _____

6) $\left(x + \frac{3}{5}\right)^2 = \frac{23}{25}$ 6) _____

7) Let $f(x) = (x + 3)^2$. Find x so that $f(x) = 16$. 7) _____

8) Let $f(x) = (x - 6)^2$. Find x so that $f(x) = 50$. 8) _____

9) $3x^2 + 12x = -7$ 9) _____

10) $5m^2 + 10m + 2 = 0$ 10) _____

Solve. Round results to the nearest thousandth.

11) $x^2 - 2x - 23 = 0$ 11) _____

Solve.

12) $7 = -\frac{8}{x} - \frac{2}{x^2}$ 12) _____

13) $7x(x + 3) + 9 = 3x(x + 2)$ 13) _____

Use the discriminant to determine whether the following equations have solutions that are: two different rational solutions; two different irrational solutions; exactly one rational solution; or two different imaginary solutions.

14) $s^2 + 7s - 8 = 0$ 14) _____

15) $t^2 + 12t + 36 = 0$ 15) _____

16) $v^2 + 7v - 1 = 0$ 16) _____

Solve the problem.

17) Working together, Rick and Juanita can complete a job in 6 hours. It would take Rick 9 hours longer than Juanita to do the job alone. How long would it take Juanita alone? 17) _____

18) Two pipes can fill a large tank in 10 hours. One of the pipes, used alone, takes 15 hours longer than the other to fill the tank. How long would each pipe take to fill the tank alone? 18) _____

19) A ball is thrown downward from a window in a tall building. The distance traveled by the ball in t seconds is $s = 16t^2 + 32t$, where s is in feet. How long (to the nearest tenth) will it take the ball to fall 262 feet? 19) _____

20) A rock falls from a tower that is 432 ft high. As it is falling, its height is given by the formula $h = 432 - 16t^2$. How many seconds will it take for the rock to hit the ground (h=0)? 20) _____

Solve.

21) $(3m - 6)^2 - 6(3m - 6) + 5 = 0$ 21) _____

22) $(k - 1)^{2/3} + 4(k - 1)^{1/3} + 3 = 0$ 22) _____

23) $x^4 - 6x^2 + 8 = 0$ 23) _____

Graph.

24) $f(x) = -2x^2$ 24) _____

25) $f(x) = 4x^2$ 25) _____

Without graphing, find the vertex.

26) $f(x) = (x + 3)^2 + 3$ 26) _____

27) $f(x) = (x + 8)^2 - 4$ 27) _____

28) $f(x) = -(x - 3)^2 - 3$ 28) _____

Find the vertex.

29) $f(x) = 3x^2 - 6x - 2$ 29) _____

30) $f(x) = 2x^2 - 8x + 11$ 30) _____

31) $f(x) = 3x^2 + 18x + 31$ 31) _____

32) $f(x) = -2x^2 - 20x - 47$ 32) _____

33) $f(x) = 7x^2 - 14x + 14$ 33) _____

Find the x– and y–intercepts. If no x–intercepts exist, state so.

34) $f(x) = x^2 + 8x + 16$ 34) _____

35) $f(x) = x^2 + 18x$ 35) _____

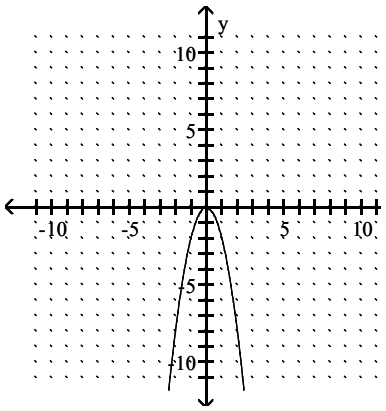
36) $f(x) = -x^2 + 13x - 42$ 36) _____

Solve.

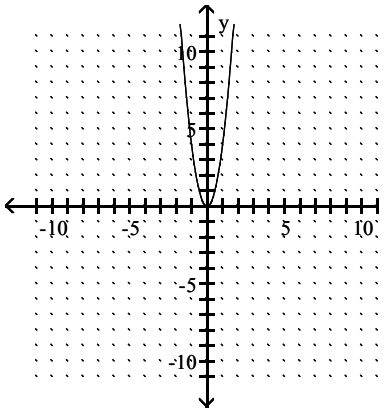
37) The length and width of a rectangle have a sum of 72. What dimensions give the maximum area? 37) _____

38) A gardener is fencing off a rectangular area with a fixed perimeter of 80 ft. What is the maximum area? 38) _____

1) ± 15
2) $\pm\sqrt{13}$
3) 8, –4
4) $-5 \pm 2\sqrt{11}$
5) $-9 \pm \sqrt{6}$
6) $\frac{-3 \pm \sqrt{23}}{5}$
7) –7, 1
8) $6 + 5\sqrt{2}$, $6 - 5\sqrt{2}$
9) $\frac{-6 \pm \sqrt{15}}{3}$
10) $\frac{-5 \pm \sqrt{15}}{5}$
11) 5.899, –3.899
12) $\frac{-4 \pm \sqrt{2}}{7}$
13) $-\frac{3}{4}$, –3
14) Two different rational solutions
15) Exactly one rational solution
16) Two different irrational solutions
17) 9 hr
18) 15 hr for one
30 hr for the other
19) 3.2 sec
20) 5.2 sec
21) $\frac{11}{3}, \frac{7}{3}$
22) –26, 0
23) $\pm 2, \pm\sqrt{2}$
24)



25)



26) (–3, 3)
27) (–8, –4)
28) (3, –3)
29) (1, –5)
30) (2, 3)
31) (–3, 4)
32) (–5, 3)
33) (1, 7)
34) (–4, 0), (0, 16)
35) x–intercepts (0, 0) and (–18, 0);
y–intercept (0,0)
36) x–intercepts (6, 0) and (7, 0);
y–intercept (0,–42)
37) Length 36 and width 36
38) 400 ft^2