Math 115 Name_____
Sample Test Chapter 11

Solve the equation.

1) $5x^2 - 3x = 8$ 1) _____

Use the square root property to solve the equation.

2) $x^2 + 81 = 0$ 2) _____

Solve the equation.

3) $(x + 5)^2 = 10$ 3) _____

4) $m^2 + m + 8 = 0$ 4) _____

5) $u^2 + 10u + 6 = 0$ 5) _____

6) $4x^2 + 5x + 1 = 0$ 6) _____

7) $y^2 - 5y = 3$ 7) _____

8) $\frac{5}{x - 1} + \frac{x}{x + 1} = \frac{7}{x^2 - 1}$ 8) _____

Solve.

9) $x^{2/3} - 6x^{1/3} + 8 = 0$ 9) _____

10) $x^4 - 7x^2 - 18 = 0$ 10) _____

Solve the equation.

11) $(x + 1)^2 + 8(x + 1) + 15 = 0$ 11) _____

Use the discriminant to determine the number and type of solutions of the equation.

12) $x^2 + 3x - 4 = 0$ 12) _____

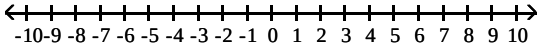
Solve the equation by completing the square.

13) $x^2 + 12x = -15$ 13) _____

14) $8a^2 + 1 = 3a$ 14) _____

Solve the inequality. Graph the solution set and write the solution set in interval notation.

15) $(x + 4)(x - 2) > 0$ 15) _____



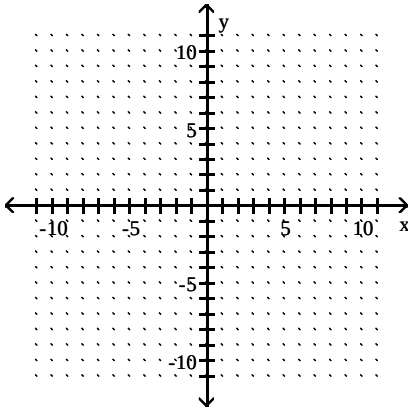
Solve the inequality. Write the solution set in interval notation.

16) $x^2 + 3x \geq 4$ 16) _____

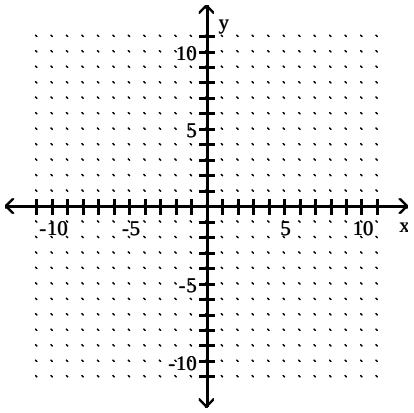
17) $(x^2 - 64)(x^2 - 4) > 0$ 17) _____

Graph the function. Find the vertex.

18) $f(x) = 4x^2$ 18) _____

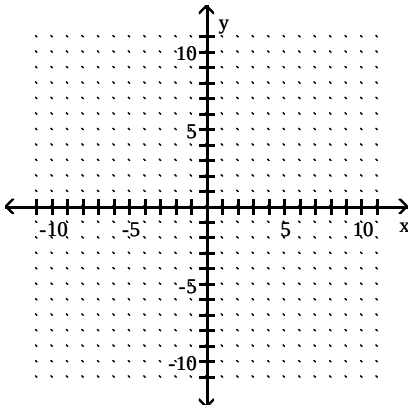


19) $G(x) = 2(x - 2)^2 + 1$ 19) _____

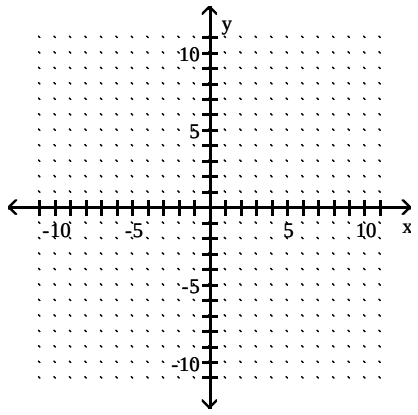


Graph the function. Find the vertex, y–intercept, and x–intercepts (if any).

20) $h(x) = x^2 - 8x + 16$ 20) _____



21) $F(x) = 2x^2 - 4x + 4$ 21) _____



Solve.

22) An express train travels 190 miles between two cities. During the first 90 miles of a trip, the train traveled through mountainous terrain. The train traveled 20 miles per hour slower through mountainous terrain than through level terrain. If the total time to travel between the cities was 5 hours, find the speed of the train on level terrain. 22) _____

23) The product of a number and 4 less than the number is 32. Find the number. 23) _____

24) A rocket is launched from the top of a cliff that is 80 feet high with an initial velocity of 240 feet per second. The height, h(t), of the rocket after t seconds is given by the equation $h(t) = -16t^2 + 240t + 80$. How long after the rocket is launched will it strike the ground? Round to the nearest tenth of a second, if necessary. 24) _____

25) The hypotenuse of a right triangle is 13 feet long. One leg of the triangle is 3 feet longer then the other leg. Find the perimeter of the triangle. 25) _____

Answer Key
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1) $\frac{8}{5}$, –1

2) –9i, 9i

3) $-5-\sqrt{10}, -5+\sqrt{10}$

4) $\frac{-1-i\sqrt{31}}{2}, \frac{-1+i\sqrt{31}}{2}$

5) $-5-\sqrt{19}, -5+\sqrt{19}$

6) $-\frac{1}{4}$, –1

7) $\frac{5+\sqrt{37}}{2}, \frac{5-\sqrt{37}}{2}$

8) $-2-\sqrt{6}, -2+\sqrt{6}$

9) 8, 64

10) $-3, 3, -i\sqrt{2}, i\sqrt{2}$

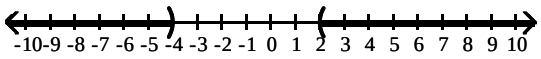
11) –6, –4

12) two real solutions

13) $-6-\sqrt{21}, -6+\sqrt{21}$

14) $\frac{3-i\sqrt{23}}{16}, \frac{3+i\sqrt{23}}{16}$

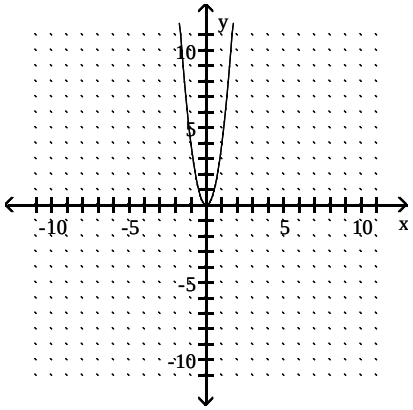
15) $(-\infty, -4) \cup (2, \infty)$



16) $(-\infty, -4] \cup [1, \infty)$

17) $(-\infty, -8) \cup (-2, 2) \cup (8, \infty)$

18) vertex: (0, 0)



Answer Key
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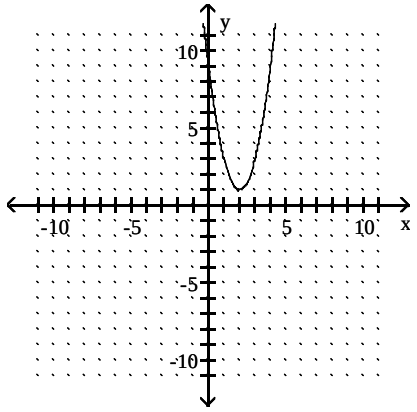
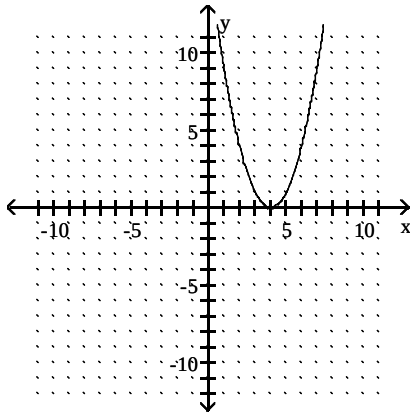
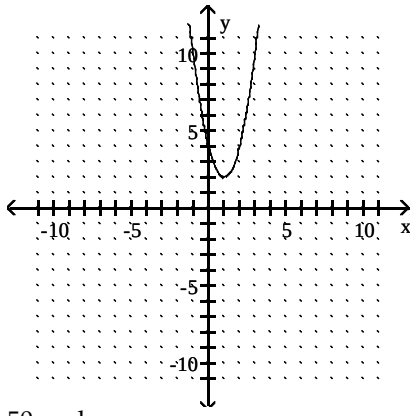
19) vertex: (2, 1)



20) vertex: (4, 0)
x–intercept: (4, 0), y–intercept: (0, 16)



21) vertex: (1, 2)
x–intercept: none, y–intercept: (0, 4)



22) 50 mph
23) –4 or 8
24) 15.3 sec
25) $\sqrt{329}$ + 13 feet