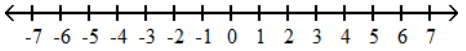
M125 Online Practice Final Exam

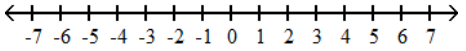
Solve the inequality. Give the solution set in both interval and graph forms.

1) $5x - 1 < 4$ and $x - 2 > -1$ 1) _____

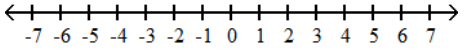


Solve the inequality. Give the solution set in both set-builder notation and graph form.

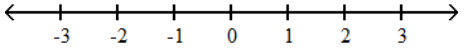
2) $-25 < -5x + 5 \leq -5$ 2) _____



3) $9x + 8 \geq -1$ and $5x + 2 \geq 22$ 3) _____

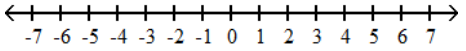


4) $4 < 1 - 4x \leq 6$ 4) _____

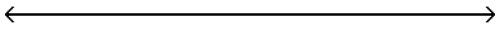


For the compound inequality, give the solution set in both interval and graph forms.

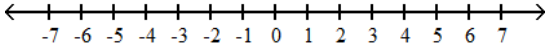
5) $-4b + 3 < 15$ or $-4b + 3 \geq 31$ 5) _____



6) $-4x + 1 \geq 9$ or $5x + 3 \geq -17$ 6) _____



7) $6x - 4 < 2x$ or $-3x \leq -9$ 7) _____



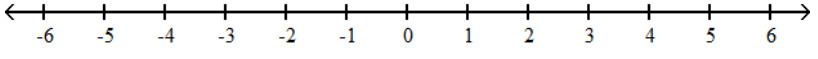
Solve the equation.

8) $\left|\frac{-7x - 1}{-9}\right| = -5$ 8) _____

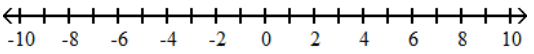
9) $\left|3z - \frac{4}{3}\right| - \frac{2}{3} = 6$ 9) _____

Solve and graph. Write the solution in interval notation.

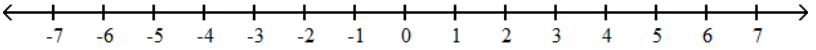
10) $|5y - 5| - 3 < -5$ 10) _____



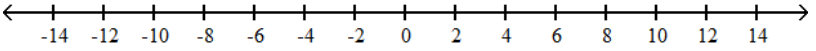
11) $|-2x - 1| < 8$ 11) _____



12) $|3y - 3| - 9 > -11$ 12) _____



13) $\left|\frac{5 - 2x}{7}\right| \geq 2$ 13) _____

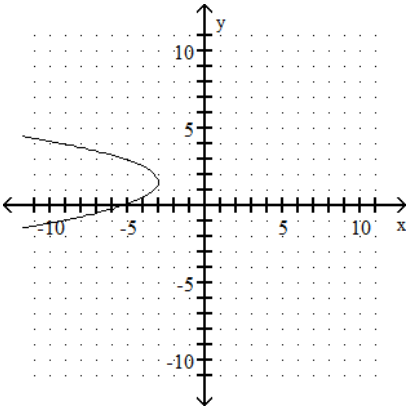


Determine whether the relation is a function.

14) {(-5, 2), (-3, 2), (4, -3), (4, -6)} 14) _____

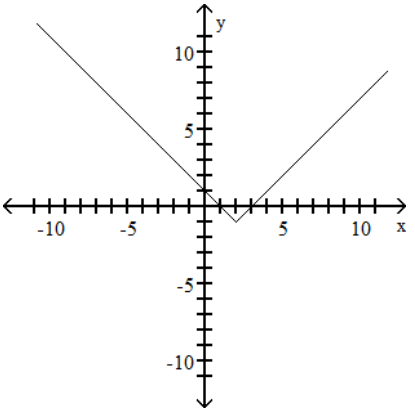
Identify the domain and range of the relation.

15) 15) _____



Determine whether the graph is the graph of a function.

16) 16) _____



Find f / g.

17) $f(x) = 6x^2 + 46x - 72,\ g(x) = x + 9$ 17) _____

18) $f(x) = x^2 + 4x - 36,\ g(x) = x + 9$ 18) _____

Find f · g.

19) $f(x) = 5x + 8,\ g(x) = 3x^2 - x - 3$ 19) _____

Solve the system of equations.

20) 20) _____

$$\begin{cases} 2x + 3y + z = 9 \\ 4x - 4y - z = 0 \\ 2x + y + 2z = -1 \end{cases}$$

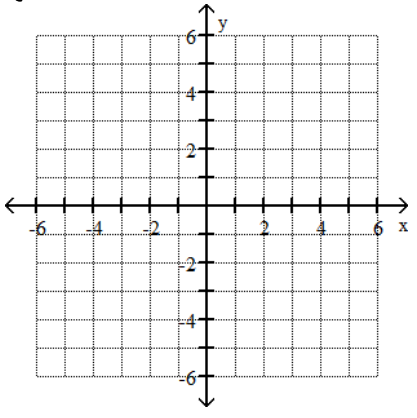
Find the domain.

21) $f(x) = \sqrt[3]{x - 6}$ 21) _____

Graph the solution of the system.

22) 22) _____

$$\begin{cases} 2x + 3y \geq 6 \\ x - y \geq 3 \\ y \leq 2 \end{cases}$$



Perform the indicated operation. Write the result using a radical.

23) $\sqrt[4]{w} \cdot \sqrt[5]{w^2}$ 23) _____

24) $\dfrac{\sqrt[10]{v^7}}{\sqrt[12]{v^5}}$ 24) _____

Find the product and write the answer in simplest form. Assume variables represent nonnegative values.

25) $\sqrt[5]{x^2z^3} \cdot \sqrt[5]{x^{23}z^{39}}$ 25) _____

Simplify the radicals and then find the sum or difference. Assume all variables have nonnegative values.

26) $8\sqrt{108} + 10\sqrt{48} + 9\sqrt{27}$ 26) _____

27) $8\sqrt[5]{m^{11}p^7} - 5m^2p\sqrt[5]{mp^2}$ 27) _____

Simplify.

28) $\sqrt{2} \cdot \sqrt{14} + \sqrt{125} \cdot \sqrt{35}$ 28) _____

Use the distributive property.

29) $3\sqrt{2}(3\sqrt{2} + 4\sqrt{22})$ 29) _____

Rationalize the denominator and simplify.

30) $\frac{3}{8 - \sqrt{6}}$ 30) _____

31) $\frac{\sqrt{3}}{3\sqrt{5} - \sqrt{3}}$ 31) _____

Solve.

32) $\sqrt{3x + 1} = 3 + \sqrt{x - 4}$ 32) _____

33) $\sqrt{2x + 15} - x = 6$ 33) _____

Write the number as a product of a real number and i. Simplify the radical expression.

34) $\sqrt{-288}$ 34) _____

35) $-\sqrt{-204}$ 35) _____

Write the quotient in standard form.

36) $\frac{3 + 3i}{5 + 2i}$ 36) _____

Find the power of i.

37) i^{-17} 37) _____

Solve the equation by completing the square.

38) $6x^2 + 2x = 4$ 38) _____

Solve using the quadratic formula.

39) $6x^2 + 19x + 10 = 0$ 39) _____

40) $8x^2 + 7x = -2$ 40) _____

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

41) $y = x^2 - 12x + 36$ 41) _____

42) $y = 3x^2 + 6x + 1$ 42) _____

43) $y = -x^2 + 9x - 20$ 43) _____

44) $y = x^2 + 6x + 18$ 44) _____

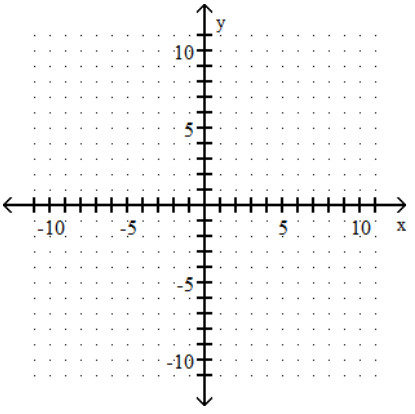
Solve.

45) $4x^4 - 5x^2 + 1 = 0$ 45) _____

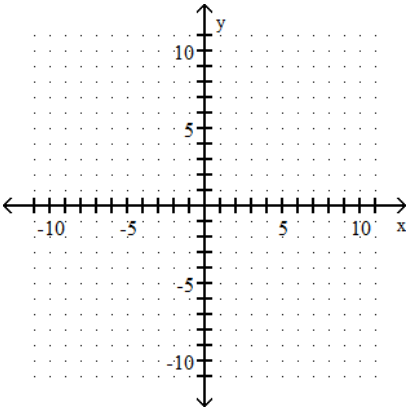
46) $2x^{1/2} - 7x^{1/4} - 30 = 0$ 46) _____

Graph the equation.

47) $f(x) = x^2 + 8x + 16$ 47) _____



48) $f(x) = -x^2 - 2x + 3$ 48) _____

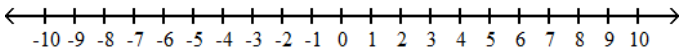


Solve the inequality.

49) $\frac{4x}{6 - x} < x$ 49) _____

Solve the inequality, and graph the solution set.

50) $t^2 - 2t - 15 \le 0$ 50) _____



Find the composition.

51) $f(x) = 5x + 9;\ g(x) = \frac{2}{x}$ 51) _____

Find $(g \circ f)(3)$.

Find the indicated composition.

52) $f(x) = x^2 + 6;\ g(x) = 5x + 1$ 52) _____

Find $(f \circ g)(x)$.

Find $f^{-1}(x)$ for the following one-to-one function f.

53) $f(x) = \frac{x - 10}{x - 6}$ 53) _____

54) $f(x) = 5x^3 - 7$ 54) _____

Solve the equation.

55) $4^x = 32^{(2x - 2)}$ 55) _____

56) $\left(\frac{625}{16}\right)^{x + 1} = \left(\frac{2}{5}\right)^{x - 1}$ 56) _____

57) $4^x = 11$ (Round to the nearest hundredth.) 57) _____

Solve the logarithmic equation.

58) $\log (x + 3) = 1 - \log x$ 58) _____

59) $\log (4 + x) - \log (x - 5) = \log 2$ 59) _____

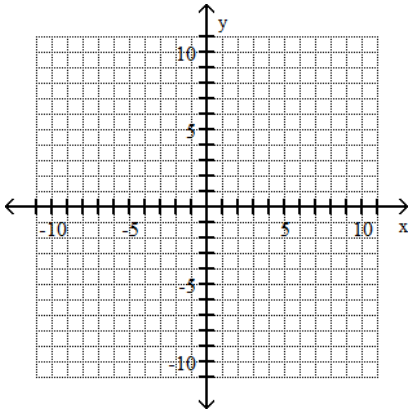
Compute the compound interest.

60) How long will it take for $500 to grow to $11,500 at an interest rate of 11.1% if the interest is compounded continuously? Round the number of years to the nearest hundredth. 60) _____

61) How long will it take for $6300 to grow to $22,000 at an interest rate of 9.2% if the interest is compounded quarterly? Round the number of years to the nearest hundredth. 61) _____

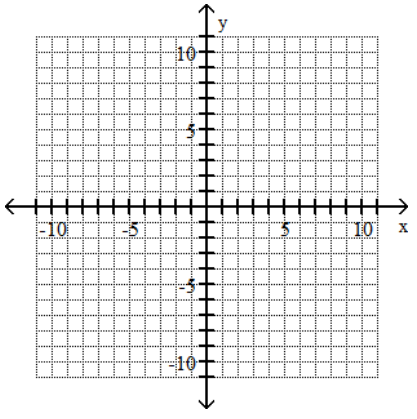
Find the direction the parabola opens, the coordinates of the vertex, the equation of the axis of symmetry and draw the graph.

62) $x = -y^2 - 4y + 3$ 62) _____



Find the center and radius and draw the graph.

63) $(x - 3)^2 + (y + 5)^2 = 16$ 63) _____

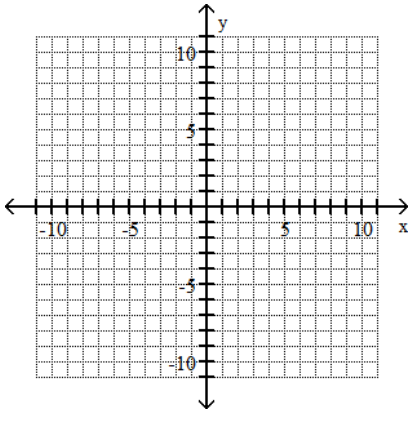


Use the given information to write the equation of the circle in standard form.

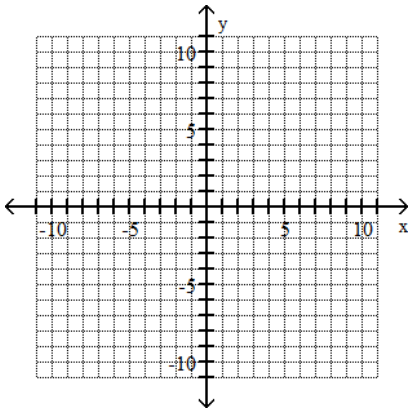
64) Center: (5, 7), point on the circle (13, 13) 64) _____

Graph the ellipse. Give the points above, below, to the left, and to the right of the center.

65) $\frac{(x - 3)^2}{25} + \frac{(y + 3)^2}{36} = 1$ 65) _____

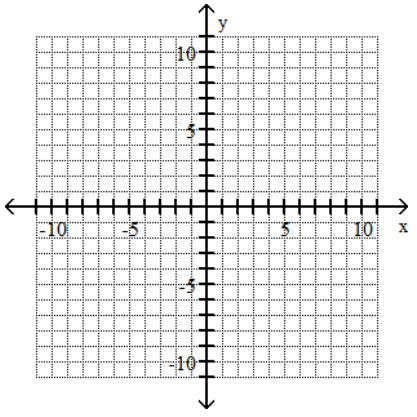


66) $36x^2 + 16y^2 = 576$ 66) _____



Graph the hyperbola and label all intercepts.

67) $\frac{y^2}{4} - \frac{x^2}{25} = 1$ 67) _____



68) $9x^2 - 16y^2 = 144$ 68) _____