Math 60 Review Practice Questions

Note 1: Consult with a tutor and/or your Professor if you need any additional assistance. Study your notes, past homework assignments, quizzes, and tests.

Note 2: NO NOTES OR GRAPHING CALCULATORS ARE ALLOWED ON THE FINAL EXAM.

Evaluate the expression if possible.

1.) $\left(\frac{1}{27}\right)^{\frac{2}{3}}$

a) 9 b) $\frac{1}{9}$ c) $-\frac{1}{9}$ d) $\frac{1}{18}$ e) none of these

Solve the equation and find the SUM of the solutions.

2.) $\frac{1}{x}+\frac{1}{x+6}=\frac{x+7}{x+6}$

a) the sum is -5 b) the sum is -1 c) the sum is 1 d) the sum is 5 e) none of these

Find the SUM of the value(s) of the variable for which the rational expression is undefined.

3.) $\frac{5y+3}{y^3-5y^2-24y}$

a) the sum is 5 b) the sum is 0 c) the sum is -5 d) the sum is 8 e) none of these

Solve the equation and find the SUM of the solutions.

4.) $|-2x+1|=11$

a) -1 b) -5 c) 1 d) $\emptyset$ e) none of these

Simplify the square root.

5.) $\sqrt{16x^2+56x+49}$

a) $4x+7$ b) $|4x+7|$ c) $-4x-7$ d $(4x+7)^2$ e) none of these

Simplify the complex rational expression.

6.) $\dfrac{\frac{x^3}{x^2-9}}{\frac{x^3-8x^2}{x^2+5x-24}}$

a) $\frac{x^5(x-8)}{(x+3)(x+8)(x-3)^2}$ b) $\frac{x(x+8)}{(x+3)(x-8)}$ c) $-\frac{x(x+8)}{(x+3)(x-8)}$ d) $\frac{x(x-8)}{(x+3)(x+8)}$ e) none of these

P.Herrera: revised 4/30/2019

Simplify.

7.) $\frac{m^2-4}{m^2+6m-16} \cdot \frac{m-2}{16+6m-m^2}$

a) $-\frac{m-2}{(m+8)(m-8)}$ b) $\frac{m+2}{(m+8)(m-8)}$ c) $-\frac{m-2}{m^2}$ d) $\frac{m-2}{(m+8)(m-8)}$ e) none of these

Perform the indicated operation. Simplify if possible. Assume all variables are positive.

8.) $\frac{\frac{10x^5}{8x^2}}{\frac{6x^3}{40x^6}}$

$a)$ $\frac{1}{8}$ $b)$ $\frac{25x^8}{3}$ c) $\frac{100x^6}{12}$ d) $\frac{25x^6}{3}$ e) none of these

Simplify the expression. Assume all variables are positive.

9.) $5\sqrt[3]{a^{16}b^2} - 2\sqrt[3]{ab^2}$

a) $(5a^2-2)\sqrt[3]{ab^2}$ b) $(3a^5)\sqrt[3]{ab^2}$ c) $(5a-2)\sqrt[3]{ab^2}$ d) $5a^5 - 2\sqrt[3]{ab^2}$ e) none of these

Perform the indicated operation. Simplify if possible.

10.) $\frac{7k^2-2}{k-2} - \frac{7k+7}{2-k}$

a) $\frac{7k^2+7k+5}{2k}$ b) $-\frac{7k^2+7k+5}{k-2}$ c) $\frac{7k^2+7k+5}{k-2}$ d) $\frac{7k^2-7k+9}{k-2}$ e) none of these

Solve the equation.

11.) $m^2 + 12m + 15 = 0$

a) $\{-6+\sqrt{21}, -6-\sqrt{21}\}$ b) $\{6+\sqrt{21}, 6-\sqrt{21}\}$ c) $\{6+\sqrt{15}, 6-\sqrt{15}\}$ d) $\{-12+\sqrt{15}, -12-\sqrt{15}\}$ e) none of these

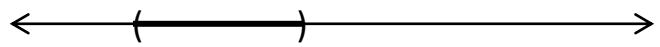
Find the distance d(P_1, P_2) between the points $P_1 and\ P_2$.

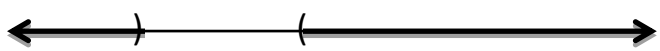
12.) P_1= (-5, 7) ; P_2= (1, -7)

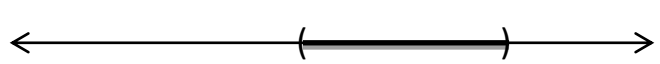
a) $2\sqrt{58}$ b) 20 c) 160 d) $160\sqrt{10}$ e) none of these

Solve the inequality. Graph the solution set. Express solution set in interval notation.

13.) $\left|\frac{3y+6}{2}\right| < 3$

a)  (-4, 0)

b)  $(-\infty, -4) \cup (0, \infty)$

c)  (0, 4)

d)  (-4, 4)

e) none of these

Simplify the radical expression. Assume all variables are positive.

14.) $\sqrt[5]{(2a^4b^2)^6}$

a) $2a^5b^2\sqrt[5]{2a^4b^2}$ b) $2a^4b^2\sqrt[5]{2a^4b^2}$ c) $2a^4b^2\sqrt[5]{a^4b^2}$ d) $2a^4b^3\sqrt[5]{2a^4b^2}$ e) none of these

Find the domain of the function.

15.) $f(x) = \frac{3x+4}{x^2+7x+6}$

a) $\{x|x \neq -1\}$ b) $\{x|x \neq 6\}$ c) $\{x|x \neq -1, 6\}$ d) $\{x|x \neq -1, -6\}$ e) none of these

Solve the system of three linear equations containing three unknowns. The SUM of the solutions is:

16.) $\begin{cases} 4x - y + 3z = 12 \\ 2x \quad + 9z = -5 \\ x + 4y + 6z = -32 \end{cases}$

a) 10 b) -6 c) -4 d) 8 e) none of these

Solve the formula for the indicated variable.

17.) $P = \frac{A}{1+rt}$ solve for *r*.

a) $r = \frac{A-P}{Pt}$ b) $r = \frac{P-1}{At}$ c) $r = P - At$ d) $r = \frac{P-A}{1+t}$ e) none of these

Find the domain of the given function.

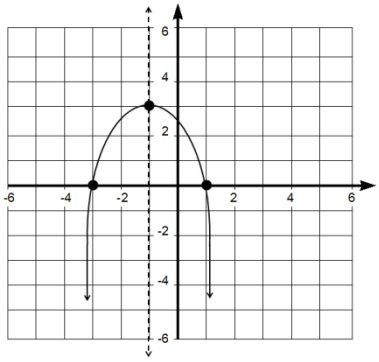
18.) $f(x) = \sqrt{-8x + 9}$

a) $\left(-\infty, \frac{8}{9}\right]$ b) $(-\infty, \frac{9}{8}]$ c) $(-\infty, \infty)$ d) $\left[\frac{9}{8}, \infty\right)$ e) none of these

Graph the quadratic function.

19.) $h(x) = x^2 - 2x - 3$

a)



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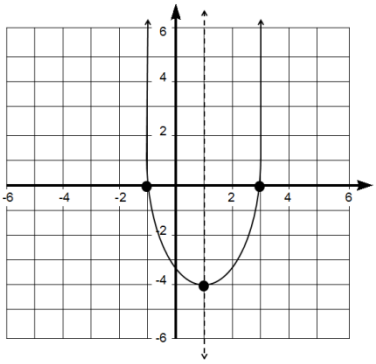
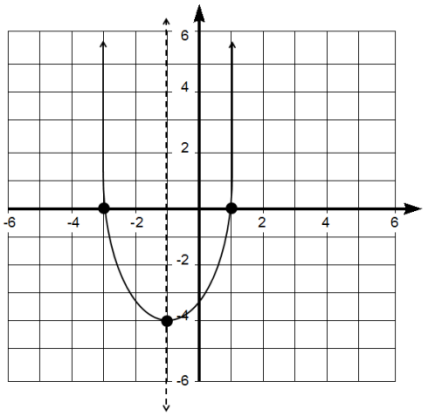
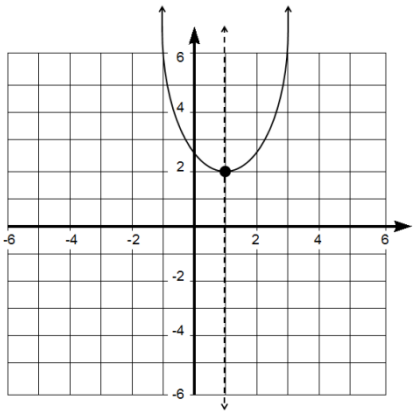


c)



d)



e) none of these

Solve the system of equations for the variable "x".

20.) $\begin{cases} -0.8x - 0.5\,y = 3.3 \\ -0.4x - 0.1y = 0.9 \end{cases}$

a) x = -1 b) x = -5 c) infinitely many solutions d) no solution e) none of these

Find the distance between the points P_1 and P_2 .

21.) $P_1 = (-3,-1)$, $P_2 = (-8,11)$

a) 13 b) 169 c) 14 d) 26 e) none of these

Rewrite the expression with a positive rational exponent. Simplify, if possible. Assume that a and b are greater than zero.

22.) $\left(\frac{27a^3b^{-6}}{a^{-3}b^6}\right)^{\frac{1}{3}}$

a) $\frac{3a^2}{b^4}$ b) $\frac{9a}{b^2}$ c) $3a^2b^6$ d) $\frac{9b^2}{a}$ e) none of these

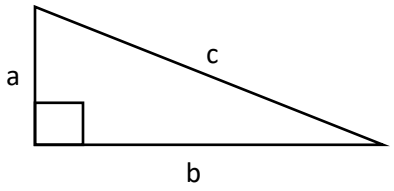
Solve the problem.

23.) Shari drove for 90 miles in the city. When she got on the highway, she increased her speed by 20 mph and drove for 130 miles. If Shari drove a total of 4 hours, how fast did she drive in the city?

a) 45 mph b) 10 mph c) 40 mph d) 65 mph e) none of these

Use the right triangle shown and find the missing length. If necessary, round to three decimal places.

24.)



b = 6, c = 10

a) 8 b) 11.662 c) 2 d) 64 e) none of these

Solve the problems.

25.) The width of a rectangle is 4 cm less than its length. If its area is $96\ cm^2$, what is the perimeter?

a) 48 cm b) 20 cm c) 24 cm d) 40 cm e) none of these

26.) Shelly can cut a lawn with a riding mower in 2 hours less time than it takes William to cut the lawn with a push mower. If they can cut the lawn in 4 hours working together find how long to the nearest tenth of an hour it takes for William to cut the lawn alone?

a) 7.1 hrs b) 9.1 hrs c) 9.2 hrs d) 7.2 hrs e) none of these

Find the quotient and simplify.

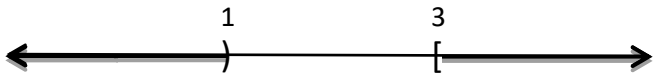
27.) $\frac{p^2-12p+pq-12q}{3p^2-3q^2} \div \frac{p-12}{8p-8q}$

a) $\frac{(p-12)^2}{24(p-q)^2}$ b) $\frac{8(p^2-12p+pq-12q)}{3(p+q)(p-12)}$ c) $\frac{8}{3}$ d) 1 e) none of these

Solve the compound inequality. Express the solution in interval notation. Graph the solution set.

28.) $9x-6 < 3x \ \ or \ \ -3x \leq -9$

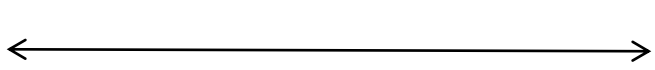
a) $(-\infty, 1) \cup [3, \infty)$



b) [1, 3]

c) (1, 3)

d) ∅



e) none of these

Perform the indicated operations and simplify.

29.) $\sqrt{2} - 4\sqrt{18} - 7\sqrt{32}$

a) $-11\sqrt{2}$ b) $-11\sqrt{52}$ c) $-39\sqrt{2}$ d) $-39\sqrt{52}$ e) none of these

Solve the equation.

30.) $x^4 - 13x^2 + 36 = 0$

a) $\{2, 3\}$ b) $\{-2, 2, -3, 3\}$ c) $\{-16, 6\}$ d) $\{-4, 4, -9, 9\}$ e) none of these

Simplify the rational expression.

31.) $\frac{x^3+7x^2+10x}{x^2+9x+14}$

a) $\frac{x+5}{x(x+7)}$ b) $\frac{x^3+7x^2+10x}{x^2+9x+14}$ c) $\frac{x(x+5)}{x+7}$ d) $\frac{x+5}{x+7}$ e) none of these

Simplify the expression. Assume all variable represent positive real numbers.

32.) $\frac{\sqrt{16x^7y^{10}}}{\sqrt{xy^{16}}}$

a) $\frac{4x^6}{y^6}$ b) $\frac{4\sqrt{x^6}}{y^6}$ c) $4x^3y^3$ d) $\frac{4x^3}{y^3}$ e) none of these

Perform the indicated operation. Simplify if possible.

33.) $\frac{x}{x^2-25} + \frac{5}{x+5} - \frac{6}{x}$

a) $\frac{25(x-6)}{(x+5)(x-5)}$ b) $\frac{-25(x-6)}{x(x+5)(x-5)}$ c) $\frac{6x^2-25x+150}{x(x+5)(x-5)}$ d) $\frac{25(x+6)}{x(x+5)(x-5)}$ e) none of these

Solve the problem.

34.) If $f(x) = 8x^3 + 5x^2 - x + C \text{ and } f(3) = 1$, what is the value of C?

a) C = 265 b) C = -29 c) C = 175 d) C = -257 e) none of these

Multiply, and then simplify if possible.

35.) $\left(8\sqrt{5} + 7\right)^2$

a) $369 - 112\sqrt{5}$ b) $271 + 112\sqrt{5}$ c) $369 + 112\sqrt{5}$ d) $327 + 112\sqrt{5}$ e) none of these

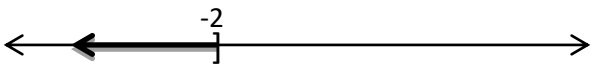
Solve the problem.

36.) Chandra has 2 liters of a 14% solution of sodium hydroxide in a container. What is the amount and concentration of sodium hydroxide solution she must add to this in order to end up with 7 liters of a 34% solution?

a) 5 L of 40% soln. b) 5 L of 45% soln. c) 5 L of 43% soln. d) 5 L of 42% soln. e) none of these

Solve the inequality. Graph the solution set and write the solution set in set-builder notation.

37.) $x^2 - 4x - 12 \leq 0$

a 

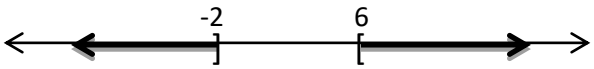
$\{x|x \leq -2\}$

b) 

$\{x|-2 \leq x \leq 6\}$

c) 

$\{x|x \geq 6\}$

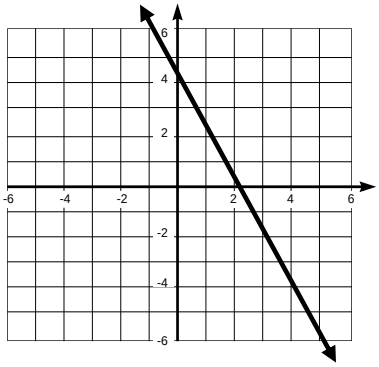
d 

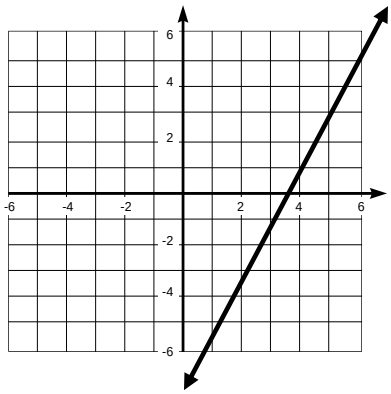
$\{x|x \leq -2 \ or \ x \geq 6\}$

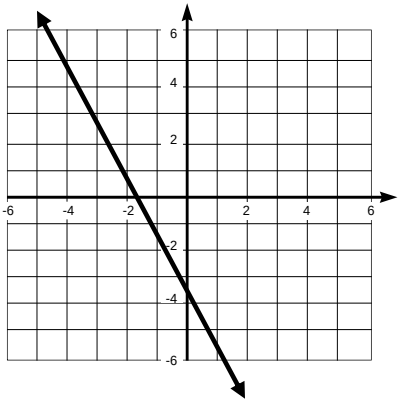
e) none of these

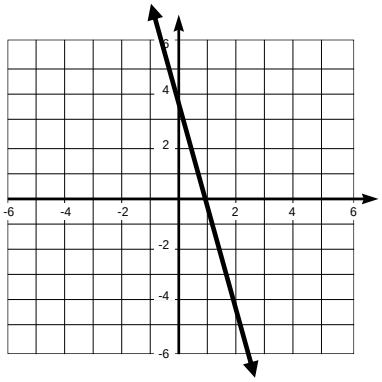
Graph the linear function.

38.) $f(x) = -2x - 4$

a) 

b) 

c) 

d) 

e) none of these

Solve the equation and find the SUM of the solutions.

39.) $\sqrt{2x}+2=x-2$

a) 8 b) 2 c) -4 d) $\frac{4}{3}$ e) none of these

Solve the problem.

40.) The value of a $22,500 car after x years is given by the function $V(x)=22{,}500-4500x$. What is the value of the car after 5 years?

a) $9,000 b) $17,995 c) $0 d) $4,500 e) none of these

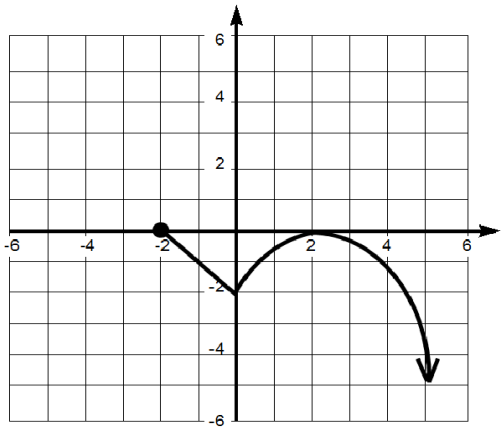
Perform the indicated operation.

41.) $\frac{3x}{x^2-25}+\frac{1}{3x+15}$

a) $\frac{3x+1}{3(x+5)(x-5)}$ b) $\frac{8x-5}{3(x+5)(x-5)}$ c) $\frac{x+1}{(x+5)(x-5)}$ d) $\frac{5(2x-1)}{3(x+5)(x-5)}$ e) none of these

Find the domain, the range, and any intercepts.

42.)



a) domain: {x|x≤0} range: {y|y≥-2}
intercepts: (-2, 0), (0, -2), (2,0)

b) domain: {x|x≥-2} range: {y|y≤0}
intercepts: (-2, 0), (0, -2), (2,0)

c) domain: {x|x is a real #} range: {y|y is a real #}
intercepts: (-2, 0), (0, -2), (2,0)

d) not a function

e) none of these

Solve the system of equations.

43.) $\begin{cases} x+3y=6 \\ 9y=-3x+18 \end{cases}$

a) (2, 2) b) ∅ c) $\{(x,y)|x+3y=6\}$ d) $\left(\frac{1}{6},\frac{2}{3}\right)$ e) none of these

Find the domain of the function.

44.) $f(x)=\frac{1}{6x+4}$

a) $\left\{x\middle|x\neq 0,\frac{2}{3}\right\}$ b) $\left\{x\middle|x\neq -\frac{2}{3}\right\}$ c) $\left\{x\middle|x\neq \frac{2}{3}\right\}$ d) $\left\{x\middle|x\neq -\frac{2}{3},0\right\}$ e) none of these

Solve the compound inequality. Graph the solution set. Write solution using interval notation.
45.) $\frac{8}{5}x + 3 < 19 \; and \; \frac{8}{5}x + 3 \geq 11$

a) 

(5,6]

b) 

[5,10)

c) 

[5,6)

d) 

(5,10]

e) none of these

Solve the problem.
46.) The function $f(x) = -x^2 + 8x + 15$ represents the path of a ball thrown up in the air. Find the maximum height the ball will travel, in feet.

a) 4 ft b) 32 ft c) 15 ft d) 63 ft e) none of these

Explain how to obtain the graph of the given quadratic function from the graph of $\mathbf{y = x^2}$.
47.) $f(x) = (x - 3)^2 + 7$

a) Take the graph of $y = x^2$ and shift it 3 units to the left and 7 units up.
b) Take the graph of $y = x^2$ and shift it 3 units to the left and 7 units down.
c) Take the graph of $y = x^2$ and shift it 3 units to the right and 7 units up.
d) Take the graph of $y = x^2$ and shift it 3 units to the right and 7 units down.

For the following function, indicate its vertex.
48.) $f(x) = -3x^2 - 12x - 7$

a) (5, -2) b) (-3, -7) c) (2, 42) d) (-2, 5) e) none of these

Solve the problem.
49.) The manufacturer of a cell phone has found that the revenue R (in dollars) is $R(p) = -p^2 + 230p$, when the unit prices is p dollars. If the manufacturer sets the price p to maximize revenue, what is the maximum revenue to the nearest whole dollar?

a) \$26,450 b) \$13,225 c) \$115 d) \$264,500 e) none of these

Use the quadratic formula to solve the equation.

50.) $-2x^2 + 5x - 6 = 0$

a) $\left\{1 - \frac{\sqrt{3}}{2}, 1 + \frac{\sqrt{3}}{2}\right\}$ b) $\left\{1, \frac{\sqrt{3}}{2}\right\}$ c) $\left\{\frac{1}{2} - \frac{\sqrt{3}}{2}, \frac{1}{2} + \frac{\sqrt{3}}{2}\right\}$ d) $\{1 - \sqrt{3}, 1 + \sqrt{3}\}$ e) none of these

Simplify if possible.

51.) $\dfrac{\frac{3}{x} + \frac{2}{y}}{\frac{6}{x} - \frac{7}{y}}$

a) $\frac{3y+2x}{6y-7x}$ b) $\frac{3x-2y}{6x-7y}$ c) $\frac{3y-2x}{6y+7x}$ d) $\frac{3(x+y)}{7(x-y)}$ e) none of these

Solve the system of three linear equations. The y coordinate is:

52.) $\begin{cases} 2x + z = 8 \\ y + 3z = 15 \\ x + y + z = 9 \end{cases}$

a) 4 b) 2 c) 3 d) -5 e) none of these

Solve the problem.

53.) Bob needs to wash the windows on his house. He has a 25-foot ladder and places the base of the ladder 10 feet from the wall on the house. How far up the wall will the ladder reach?

a) 14 ft b) 13 ft c) 15 ft d) 16 ft e) none of these

Perform the operation. Simplify if possible.

54.) $\frac{2z^2-8}{6z^2-5z-6} \cdot \frac{3z^2+7z-6}{2z^2+2z-12}$

a) $\frac{z-2}{2z+3}$ b) $z + 2$ c) $\frac{3z-2}{2z-3}$ d) $\frac{(z+2)(3z-2)}{(2z-3)(3z+2)}$ e) none of these

Simplify the expression.

55.) $32^{-\frac{4}{5}}$

a) Not a real number b) $-\frac{1}{16}$ c) $\frac{1}{16}$ d) 16 e) none of these

Find the LCD of the following rational expressions.

56.) $\frac{4x-5}{2x^2-7x+3}$, $\frac{2x+3}{2x^2+7x-4}$

a) $(x-3)(x+4)$ b) $(x+4)^2$ c) $(2x-1)(x+4)$ d) $(x-3)(x+4)(2x-1)$ e) none of these

Perform the following operation. Simplify if possible.

57.) Find the difference of $\frac{4x+6}{2x^2+x-3}$ and $\frac{x-1}{x^2-1}$

a) $\frac{x-3}{x+1}$ b) $\frac{x+3}{(x+1)(x-1)}$ c) $\frac{x-3}{(x+1)(x-1)}$ d) $\frac{x+3}{x-1}$ e) none of these

Solve the equation. Compute the sum of the solutions.

58.) $|\ 5x+3\ | = |\ 12-4x\ |$

a) -14 b) 7 c) -7 d) 14 e) none of these

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

59.) $|\ 2-5x\ |+3<10$

a) 

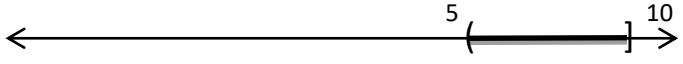
(-1, $\frac{9}{5}$)

b) 

[-5, 10)

c) 

($-\frac{9}{5}$, 1)

d) 

(5, 10]

e) none of these

Perform the indicated operations and simplify.

60.) $\sqrt[3]{-54x^3}+3x\sqrt[3]{16}-2\sqrt[3]{128}$

a) $\sqrt[3]{2}$ b) $(3x-8)\sqrt[3]{2}$ c) $-3x$ d) $(3x+8)\sqrt[3]{2}$ e) none of these

Solve the equation.

61.) $(x-1)^2=18$

a) $\{1-3\sqrt{2}, 1+3\sqrt{2}\}$ b) $\{1-\sqrt{2}, 1+\sqrt{2}\}$ c) $\{0\}$ d) $\{-3\sqrt{2}, 3\sqrt{2}\}$ e) none of these

Write the following function in the form $f(x)=a(x-h)^2+k$.

62.) $f(x)=-2x^2+12x-17$

a) $f(x)=(x-3)^2+2$ b) $f(x)=(x+3)^2$ c) $f(x)=-2(x-3)^2+1$ d) $f(x)=-2(x+3)^2+1$

e) none of these

Multiply, and then simplify if possible.

63.) $\sqrt{5x}\left(6+\sqrt{15x}\right)$

a) $\sqrt{5x}+5x\sqrt{3}$ b) $6-5\sqrt{3x}$ c) $6\sqrt{5x}+5x\sqrt{3}$ d) $3+6\sqrt{5x}$ e) none of these

Rewrite the expression with a positive rational exponent. Simplify, if possible.

64.) $\left(25x^2y^{\frac{3}{2}}\right)^{\frac{1}{2}}$

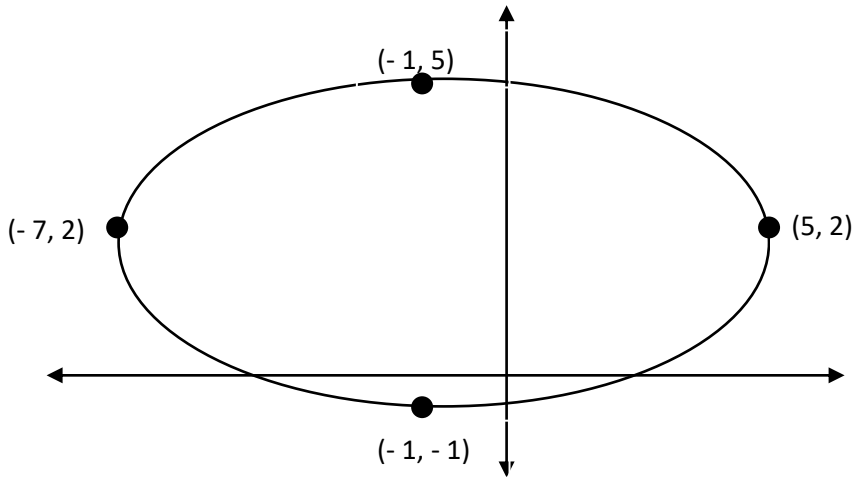
a) $5xy^{\frac{3}{4}}$ b) $\frac{25x}{y^{\frac{3}{4}}}$ c) $\frac{5x}{y^{\frac{3}{4}}}$ d) $25xy^{\frac{3}{4}}$ e) none of these

65.) $\frac{3^{1/7}}{3^{-13/7}}$

a) 9 b) $\frac{1}{3^{12/7}}$ c) $3^{1/2}$ d) 2 e) none of these

Identify the domain and the range of the relation from the graph.

66.)



a) domain: $[-7,-5]$ range: $[-1,-5]$ b) domain: $[-7,-5]$ range: $[-5,-1]$ c) domain: $[-5,-7]$ range: $[1,5]$ d) domain: $[-7,5]$ range: $[-1,5]$ e) none of these

Math 60 Review Practice Answers

1. b
2. c
3. a
4. c
5. b
6. b
7. a
8. d
9. e
10. c
11. a
12. a
13. a
14. b
15. d
16. b
17. a
18. b
19. b
20. a
21. a
22. a
23. a
24. a
25. d
26. b
27. c
28. a
29. c
30. b
31. c
32. d
33. b
34. d
35. c
36. d
37. b
38. c
39. a
40. c
41. d
42. b
43. c
44. b
45. b
46. e
47. c
48. d
49. b
50. a
51. a
52. c
53. e
54. d
55. c
56. d
57. b
58. a
59. a
60. b
61. a
62. c
63. c
64. a
65. a
66. d