

Name _____ M. Aty www.abdelaty.com _____

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

Provide an appropriate response.

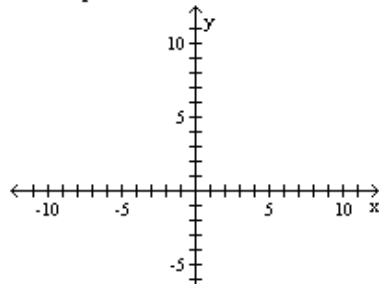
1) For the parabola $y = f(x) = x^2 - 2x - 8$, find: (a) the vertex, (b) the y -intercept, and (c) the x -intercepts. 1) _____

2) For the parabola $y = f(x) = 2x^2 - 4x - 6$, find: (a) the vertex, (b) the y -intercept, and (c) the x -intercepts. 2) _____

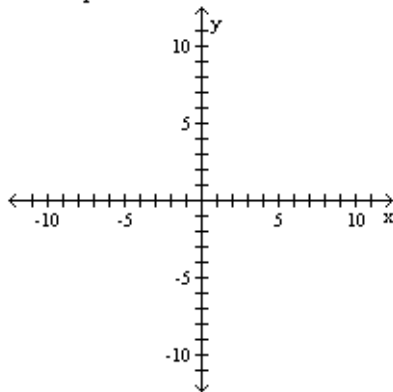
3) For the parabola $y = f(x) = -x^2 + 7x - 6$, find: (a) the vertex, (b) the y -intercept, and (c) the x -intercepts. 3) _____

4) For the parabola $y = f(x) = 4 - x - 3x^2$, find: (a) the vertex, (b) the y -intercept, and (c) the x -intercepts. 4) _____

5) Graph the function $y = f(x) = x^2 - 6x$ and indicate the coordinates of the vertex and intercepts. 5) _____

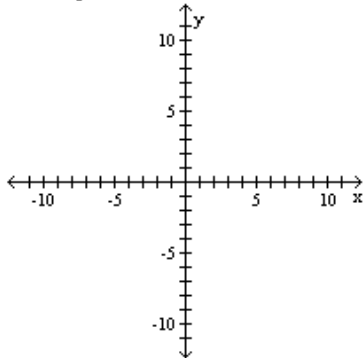


6) Graph the function $y = f(x) = x^2 - 6x + 5$ and indicate the coordinates of the vertex and intercepts. 6) _____



7) Graph the function $y = f(x) = -x^2 + 5 - 4$ and indicate the coordinates of the vertex and intercepts.

7) _____



8) Find the range of the function $y = f(x) = -x^2 + 3x + 2$.

8) _____

MIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

9) Find the x-coordinate of the vertex of a graph of the quadratic function $y = f(x) = 4x^2 - 2x + 3$.

9)

A) $-\frac{1}{4}$

B) $\frac{1}{4}$

C) $-\frac{1}{2}$

D) $\frac{1}{2}$

E) none of the above

- 10) Find the vertex of the graph of the quadratic function $y = f(x) = 4 + 12x - 3x^2$. 1
 A) (-2, 4) B) (4, 20) C) (2, 16) D) (-2, -32) E) (2, 4)
- 11) Find the minimum value of $g(x) = 3x^2 - 3x + 4$. 1
 A) $\frac{13}{4}$ B) $\frac{1}{2}$ C) 0 D) 4 E) $-\frac{5}{2}$
- 12) Find the maximum value of $f(x) = 7 - 2x - x^2$. 1
 A) 7 B) 8 C) 9 D) 10 E) 11
- 13) The demand function for a manufacturer's product is $p = f(q) = 800 - 2q$, where p is the price (in dollars) per unit when q units are demanded (per week). Find the level of production that maximizes the manufacturer's total revenue. 1
 A) 125 B) 150 C) 100 D) 200 E) 175

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- 14) Solve the following system algebraically: $\begin{cases} 2x - y = 1 \\ -x + 2y = 7 \end{cases}$ 14) _____
- 15) Solve the following system algebraically: $\begin{cases} 3x - 4y = 18 \\ 2x + 5y = -11 \end{cases}$ 15) _____
- 16) Solve the following system algebraically: $\begin{cases} 3x + 5y = -6 \\ 2x - 6 = 5y \end{cases}$ 16) _____
- 17) Solve the following system algebraically: $\begin{cases} 3y - 2x = 4 \\ 4x - 6y = -8 \end{cases}$ 17) _____

TIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

- 18) If you solve the following system, what is the value of y ? $\begin{cases} 3x + 2y = 26 \\ 2x + 3y = 29 \end{cases}$ 18)
 A) 3 B) 4 C) 5 D) 6 E) 7
- 19) If you solve the following system $\begin{cases} 2x - 3y = 1 \\ x + 5y = 7 \end{cases}$, what is the value of y ? 19)
 A) 5 B) -2 C) 1 D) 2 E) -1
- 20) _____ 20)

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

21) Solve the system: $\begin{cases} y = 4x - x^2 \\ y = x^2 - 6 \end{cases}$ 21)

22) Solve the system: $\begin{cases} x^2 + y - 3 = 0 \\ 2x + y = 0 \end{cases}$ 22)

24) One solution of the system $\begin{cases} x - y^2 = 0 \\ 3x + 2y - 5 = 0 \end{cases}$ is $x = 1$ and $y = 1$. Another solution is 2

A) $x = 0, y = 0$

B) $x = \frac{9}{25}, y = -\frac{3}{5}$

C) $x = \frac{49}{2}, y = -\frac{7}{2}$

D) $x = \frac{25}{9}, y = -\frac{5}{3}$

E) $x = 1, y = -1$

25) An x -value of a solution of the system $\begin{cases} x - y - 1 = 0 \\ y = \sqrt{x + 5} \end{cases}$ is 2

A) 1.

B) 4.

C) -4.

D) 11.

E) -1.

26) The number of solutions of the system $\begin{cases} x^2 + y^2 = 7 \\ x^2 - y^2 = 1 \end{cases}$ is 2

A) zero.

B) one.

C) two.

D) three.

E) four.

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27) Solve the system $\begin{cases} y = 2x^2 - 5 \\ x^2 + y = 4 \end{cases}$ 27) _____

28) Solve the system $\begin{cases} 2x - 5y = 10 \\ y = \sqrt{x + 4} \end{cases}$ 28) _____

29) Suppose the supply and demand equations for a manufacturer's product are $p = \frac{3}{100}q + 6$ 29) _____

and $p = -\frac{1}{50}q + 14$, respectively, where q represents number of units and p represents price

per unit in dollars. Determine (a) the equilibrium quantity; (b) the equilibrium price. If a tax of \$1.00 per unit is imposed on the manufacturer, (c) determine the new equilibrium quantity; (d) the new equilibrium price.

30) The supply and demand equations for a product are $p = \frac{1}{10}q + 20$ and $p = 200 - \frac{1}{2}q$, respectively, 3

where q represents the number of units and p represents the price per unit in dollars. The equilibrium price is

- A) \$10. B) \$20. C) \$30. D) \$40. E) \$50.

31) A manufacturer sells his product at \$23 per unit, selling all he produces. His fixed cost is \$18,000 3
and his variable cost per unit is \$18.50. The level of production at which the manufacturer breaks even is

- A) 3000 units. B) 3500 units. C) 4000 units. D) 4500 units. E) 5000 units.

ANSWER. Write the word or phrase that best completes each statement or answers the question.

32) Find the equilibrium point if the demand equation for a product is $p = \frac{q}{20} - 3$ and the 32) _____

supply equation is $p = \frac{80}{q}$.

33) Find the Break Even Quantity for a product whose Total Revenue, y_{TR} , (in \$) and Total 33) _____
Cost, y_{TC} , (in \$) are as follows:

$$y_{TR} = (10q - 25)q$$

$$y_{TC} = 2000 + 75q$$

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$$y_{TC} = 2000 + 75q$$

- 35) Find the Equilibrium Quantity for a product with Demand Equation and Supply Equation as follows:

Demand: $p = 300 - 8q$

Supply: $p = \frac{19}{5}q + 5$

- 36) Find the Point of Equilibrium for a product with Demand Equation and Supply Equation as follows:

Demand: $p = 300 - 8q$

Supply: $p = \frac{19}{5}q + 5$

38) If \$1000 is invested for 2 years at 6% compounded quarterly, then the compound amount at the end of the period is 38)

- A) \$1120.00. B) \$1593.84. C) \$1123.60. D) \$1141.23. E) \$1126.49.

39) If \$500 is invested for 3 years at 7% compounded semiannually, then the compound interest at the end of the period is 39)

- A) \$120.37. B) \$122.56. C) \$150.36. D) \$114.63. E) \$112.52.

40) If \$10,000 is invested at 16% compounded quarterly, then the compound amount at the end of six years is 40)

- A) \$24,278.09.
B) \$26,987.33.
C) \$26,678.42.
D) \$21,173.75.
 E) \$25,633.04.

TRUE OR FALSE. Write the word or phrase that best completes each statement or answers the question.

41) Express $\log_2 \frac{1}{8} = -3$ in exponential form. 41) _____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

42) $\log_5 125 =$ 42)

- A) 0 B) 1 C) 2 D) 3 E) 4

44) The value of $\log_3 0$ is

A) -1

B) 3

C) 1

D) 0

E) not defined

45) $\log_5 \frac{1}{25} =$

A) $-\frac{1}{2}$

B) $\frac{1}{2}$

C) -5

D) -2

E) -4

ANSWER. Write the word or phrase that best completes each statement or answers the question

46) Solve for x : $\log_x 3 = \frac{1}{2}$ 46)

47) Solve for x : $\log_e 2^x = 5$ 47)

48) True or False: If $\log_a x = \log_b x$, then $a = b$. 48)

49) Solve for x : $\log_x y = 3$ 49)

50) Assume that $\log 5 = 0.6690$. Determine the value of $\log 500$. 50)

- 55) $\log 10,000 - 6 \log \sqrt{10} =$ 5
 A) $-6 \log \sqrt{10}$ B) 1 C) 0 D) 4 E) $\frac{10,000}{6\sqrt{10}}$
- 56) $\log \frac{300}{100} =$ 5
 A) $\frac{2 + \log 3}{2}$
 B) $\log 3$
 C) 3
 D) $\log 200$
 E) none of the above
- 57) $\ln e - \ln 1 =$ 5
 A) 0 B) $n(e - 1)$ C) 1 D) 6 E) ee^{-1}
- 58) $\ln 6 + \ln \frac{1}{6} + \ln e^2 =$ 5
 A) 0 B) 1 C) 2 D) 3 E) 4
- 59) If $\log 3 = 0.4771$, then $\log 0.3 =$ 5
 A) -0.5229 . B) -1.4771 . C) 0.5229 . D) -4.771 . E) 1.4441 .
- 60) If $\log 2 = 0.3010$ and $\log 3 = 0.4771$, then $\log 18 =$ 6
 A) 1.2552 . B) 1.9030 . C) 0.1761 . D) 0.0685 . E) 2.3343 .

64) $\ln \frac{x}{\sqrt{yz}} =$

A) $\ln x - \sqrt{\ln y + \ln z}$

B) $\ln x - \frac{1}{2}(\ln y + \ln z)$

C) $\ln x - \frac{1}{2}(\ln y - \ln z)$

D) $\ln x + \frac{1}{2}(\ln y - \ln z)$

E) $\frac{\ln x}{\sqrt{\ln y \ln z}}$

65) $\ln \frac{(xy)^2}{z^3} =$

A) $\ln 2 \ln x \ln y - \ln 3 \ln z$

B) $2 \ln x \ln y - 3 \ln z$

C) $\ln 2 + \ln x + \ln y - \ln 3 - \ln z$

D) $2(\ln x + \ln y) - 3 \ln z$

E) $\frac{\ln(xy)^2}{\ln z^3}$

66) Solve for x : $a^{\log_a x} + \log_a 4 = 8$ 66) _____

67) Find x and express your answer in terms of common logarithms: $4^x = 3$ 67) _____

68) Find x and express your answer in terms of common logarithms: $10^{2x-3} = 4$ 68) _____

69) Solve for x : $\ln x + \ln 3 = \ln(x + 1)$ 69) _____

70) Solve for x : $\log(x + 1) - \log(x - 2) = 1$ 70) _____

MIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

71) If $\ln x + \ln 2 = \ln 5$, then $x =$ 71

A) $\sqrt{5}$.

B) $\frac{2}{5}$.

C) $\frac{5}{2}$.

D) 3.

E) $\frac{1}{3}$.

72) If $2^{2x+1} = 8^{x-3}$, then $x =$ 72

A) 6.

B) -7.

C) -4.

D) 10.

E) $\log_2 3$.

73) If $p = 5^{4-q}$, then in terms of common logarithms, $q =$

- A) $5 - \frac{\log p}{\log 4}$. B) $5 - \frac{\log 5}{\log p}$. C) $\log 5^{4-p}$. D) $p - 4 \log 5$. E) $4 - \frac{\log p}{\log 5}$.

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74) Solve for x : $\log_3(x + 7) - 3\log_3 2 = \log_3 x$ 74) _

75) Solve for x : $(2 + x)^5 = 129.3$ 75) _