1. Simplify $\dfrac{\frac{15}{5}}{1-\frac{1}{2}}$

A. $\frac{2}{3}$

B. 2

C. $\frac{3}{2}$

D. 6

E. None of the above

2. Factor $16x^2 - 4y^8$ completely.

A. $(4x - y^2)(4x + y^2)$

B. $(4x - 2y^4)^2$

C. $4(2x - y^4)(2x + y^4)$

D. $4(2x - y^2)$

E. None of the above

3. Simplify $\left(\dfrac{4a^4b^8}{c^{-2}}\right)^{-\frac{1}{2}}$

A. $\dfrac{1}{2a^2b^4c}$

B. $\dfrac{2a^2b^4}{c}$

C. $\dfrac{a^4b^3}{16c^2}$

D. $\dfrac{c}{2a^2b^4}$

E. None of the above

4. Subtract and simplify.

$$\frac{3x}{3x+1} - \frac{x}{x-2}$$

A. $\frac{2x^2-1}{(3x+1)(x-2)}$

B. $\frac{-3x^2}{(3x+1)(x-2)}$

C. $\frac{-7x}{(3x+1)(x-2)}$

D. $\frac{2x}{(3x+1)(x-2)}$

E. None of the above

5. Simplify; do not include negative exponents in your final answer.

$$\frac{1-\frac{a}{b}}{1-\frac{a^2}{b^2}}$$

A. $\frac{1}{1+a}$

B. $\frac{b}{b-a}$

C. $\frac{1}{a}$

D. $\frac{b}{a+b}$

E. a

6. If $f(x) = \frac{3x}{5-x}$, find the inverse function of f.

A. $f^{-1}(x) = \frac{5-x}{3x}$

B. $f^{-1}(x) = \frac{3x}{x+5}$

C. $f^{-1}(x) = 5 + \frac{x}{3}$

D. $f^{-1}(x) = \frac{5x}{x+3}$

E. None of the above

7. Express $f(x) = -2x^2 + 12x - 14$ in the form $y = a(x-h)^2 + k$.

A. $y = -2(x+3)^2 + 4$
B. $y = -2(x+3)^2 + 32$
C. $y = -2(x-3)^2 + 32$
D. $y = -2(x-3)^2 + 4$
E. $y = -2(x-6)^2 - 14$

8. Which of the following statements is/are true about the function $f(x) = 2^{-x}$?

I.	The domain of $f(x)$ is $(-\infty, \infty)$
II.	The range of $f(x)$ is $(-\infty, \infty)$
III.	$f(x) \neq 0$

A. I only
B. II only
C. I and III only
D. II and III only
E. I, II, and III

9. Divide and simplify.

$$\frac{x^2 - 2x}{2x^2 + 5x - 3} \div \frac{x^2 - 5x + 6}{x^2 - 9}$$

A. $\frac{x(x+2)(x-6)}{2x-3(x-3)^2}$
B. $\frac{x}{2x-1}$
C. $\frac{x(x+2)(x-6)}{2x-3}$
D. $\frac{x(x-2)^2}{(2x-1)(x+3)^2}$
E. None of the above

10. A job takes 4 hours for two people working together. If one person works alone he can do the job in 6 hours. How long will it take the other person working alone to complete the job?

A. $4\ hrs.$

B. $6\ hrs.$

C. $8\ hrs.$

D. $10\ hrs.$

E. None of the above

11. Simplify; do not include negative exponents in your final answer.

$$\frac{xy^{-1}}{(x+y)^{-1}}$$

A. $\frac{x(x+y)}{y}$

B. $\frac{x^2}{x+y}$

C. $\frac{x+y}{xy}$

D. $\frac{xy}{x+y}$

E. None of the above

12. Simplify by rationalizing the denominator.

$$\frac{\sqrt{3}}{2+\sqrt{3}}$$

A. $\frac{1}{2}$

B. 2

C. $2\sqrt{3}-3$

D. $\sqrt{3}+2$

E. $\frac{2\sqrt{3}-3}{7}$

13. Let x and y be two consecutive positive integers such that x is less than y and the difference of their squares is 145. Find x.

A. 73

B. 72

C. 12

D. 8

E. None of the above

14. If $A = P(1 + rt)$, then $t =$

A. $\frac{A-P}{r}$

B. $A - P$

C. $\frac{A-P}{P}$

D. $\frac{A}{P}$

E. None of the above

15. A truck enters a freeway traveling 40 mph. One hour later a car enters the same freeway traveling 55 mph. After how many miles will the car overtake the truck?

A. $146\frac{2}{3}$ miles

B. $201\frac{2}{3}$ miles

C. 120 miles

D. $106\frac{2}{3}$ miles

E. None of the above

16. A square of side x is inscribed in a circle. Express the area A of the circle as a function of x.

A. $A = \frac{\pi}{2}x^2$

B. $A = x^2$

C. $A = \pi x^2$

D. $A = \frac{\pi}{4}x^2$

E. None of the above

17. Solve for p:

$$\frac{4}{2p-3} + \frac{10}{4p^2-9} = \frac{1}{2p+3}$$

A. $p = -\frac{3}{2}$

B. $p = \frac{5}{6}$

C. There is no solution

D. $p = -\frac{25}{6}$

E. None of the above

18. How many ml of a 50% acid solution should be added to 40 ml of a 20% acid solution to obtain a solution that is 25% acid?

A. 10 ml

B. 8 ml

C. 6 ml

D. 4 ml

E. None of the above

19. Solve for x and list all the real solutions:

$$x = \sqrt{14 + 5x}$$

A. $x = 3, x = 14$

B. $x = -2, x = 7$

C. $x = -2$

D. $x = \frac{14}{3}$

E. None of the above

20. Solve for m and list all solutions (real and/or imaginary):

$$m^4 - m^2 - 6 = 0$$

A. $m = 2, 3$

B. $m = -2, \pm\sqrt{3}$

C. $m = \pm\sqrt{3}, \pm 2i$

D. $m = \pm\sqrt{3}, \pm\sqrt{2}i$

E. None of the above

21. Suppose y is directly proportional to the cube root of x and inversely proportional to the square of z. Find the constant of proportionality if $y = 6$ when $x = 8$ and $z = 4$.

A. 24

B. $\frac{3}{16}$

C. 6

D. $\frac{3}{128}$

E. 48

22. Solve $x^2 + 5x + 6 \leq 0$ and express the solutions in interval notation.

A. $[-3, -2]$
B. $[-3, 2]$
C. $[2, 3]$
D. $[-6, 1]$
E. $[-1, 6]$

23. If $f(x) = 2x^2 - 5x + 3$ and $g(x) = -x + 6$, find $(g \circ f)(x) = 0$.

A. $x = -\frac{1}{2}; x = 3$
B. $x = -\frac{3}{2}; x = 1$
C. $x = \frac{1}{2}; x = 1$
D. $x = -\frac{5}{4} - \frac{\sqrt{97}}{4}; x = -\frac{5}{4} + \frac{\sqrt{97}}{4}$
E. $x = -1; x = \frac{3}{2}$

24. Solve the system.

$$\begin{cases} x - 3y = 4 \\ -2x + 6y = 2 \end{cases}$$

A. $\left(\frac{1}{2}, \frac{1}{2}\right)$
B. $\left(\frac{13}{2}, \frac{5}{6}\right)$
C. $\left(\frac{11}{2}, \frac{1}{2}\right)$
D. Infinitely many solutions
E. No solution

25. Solve the inequality and express the solution in terms of intervals

$$3x - 2 > 6x + 1$$

A. $(-\infty, -1)$

B. $(-1, 1)$

C. $(\infty, -1]$

D. $(-1, \infty)$

E. None of the above

26. Solve the inequality:

$$|6 - 2x| \leq 3$$

A. $\left[\frac{3}{2}, \infty\right)$

B. $\left(-\infty, \frac{3}{2}\right]$

C. $\left[\frac{3}{2}, \frac{9}{2}\right]$

D. $\left[-\frac{9}{2}, -\frac{3}{2}\right]$

E. None of the above

27. Find all values of k so that the solutions of the following equation are real numbers:

$$2x^2 - 4x + k = 0$$

A. $k = 2$

B. $k > 2$

C. $k \geq 2$

D. $k \leq 2$

E. None of the above

28. The base of a triangle is three inches more than its height. If each is increased by 3 inches the area is 14 square inches. Find the original base (b) and the original height (h) in inches.

A. $b = 4, h = 1$

B. $b = 9, h = 6$

C. $b = 8, h = 5$

D. $b = \frac{7}{2}, h = \frac{1}{2}$

E. None of the above

29. Solve the given system of equations, then determine which of the following is **NOT** true regarding the solutions?

$$2x^2 + y^2 = 1$$
$$x - y = 1$$

A. There are no solutions in QI

B. There are no solutions in QII

C. There are no solutions in QIII

D. There are no solutions in QIV

E. There are no solutions that lie on the x-axis

30. If $(2, 3)$ is the midpoint of segment AB, and point A has coordinates $(1, -2)$, find the coordinates of the point B.

A. $(1, 5)$

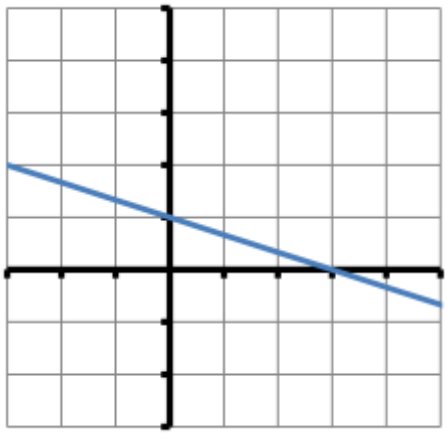
B. $(3, 1)$

C. $(3, 8)$

D. $\left(\frac{3}{2}, \frac{1}{2}\right)$

E. None of the above

31. The slope of a line perpendicular to the line drawn is:



A. $\frac{1}{3}$

B. $-\frac{1}{3}$

C. -3

D. 3

E. None of the above

32. M varies jointly with x cubed and y, and inversely with the square root of z. Find the constant of proportionality k if $M = 64$ when $x = 8, y = 5,$ and $z = 4$.

A. $k = \frac{64}{5}$

B. $k = \frac{1}{20}$

C. $k = \frac{5}{4}$

D. $k = \frac{2}{5}$

E. None of the above

33. Give the equation of the line in slope-intercept form which is parallel to the line $2x - 3y = 7$ and contains the point $(4, -1)$.

A. $y = \frac{3}{2}x - 7$

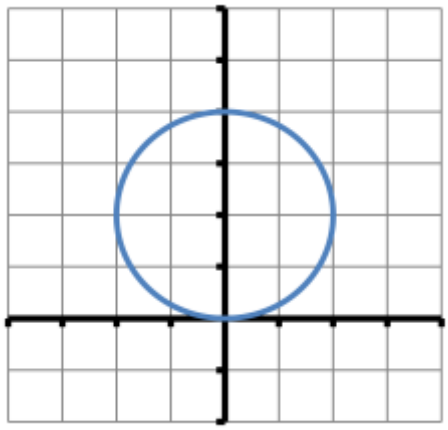
B. $y = -\frac{2}{3}x + \frac{5}{2}$

C. $y = \frac{2}{3}x - \frac{11}{3}$

D. $y = \frac{2}{3}x + \frac{14}{3}$

E. None of the above

34. The equation for the circle show is:



A. $x^2 + y^2 = 4$

B. $x^2 + y^2 - 4y = 0$

C. $x^2(y - 2) = 4$

D. $x^2 + y^2 + 4y = 0$

E. $x^2 + y^2 + 4x + 4y - 8 = 0$

35. Given that $f(x) = x^2 - x - 2$ and $g(x) = 2x - 1$, determine which of the following is/are true.

I.	$(g \circ f)(0) = -5$
II.	$(f \circ g)(x) = 0$, when $x = 0, \frac{2}{3}$
III.	$g^{-1}(x) = \frac{x+1}{2}$

A. I only

B. I and II only

C. I and III only

D. II and III only

E. I, II, and III

36. If $f(x) = \frac{x}{x^2+1}$, find $f\left(\frac{1}{3}\right)$ and $\frac{1}{f(3)}$.

A. $f\left(\frac{1}{3}\right) = \frac{3}{10}, \frac{1}{f(3)} = \frac{3}{10}$

B. $f\left(\frac{1}{3}\right) = \frac{10}{27}, \frac{1}{f(3)} = \frac{3}{10}$

C. $f\left(\frac{1}{3}\right) = \frac{10}{27}, \frac{1}{f(3)} = \frac{10}{13}$

D. $f\left(\frac{1}{3}\right) = \frac{3}{10}, \frac{1}{f(3)} = \frac{10}{3}$

E. None of the above

37. Find the domain of f.

$$f(x) = \sqrt{3x - 2} + 1$$

A. $(-\infty, \infty)$

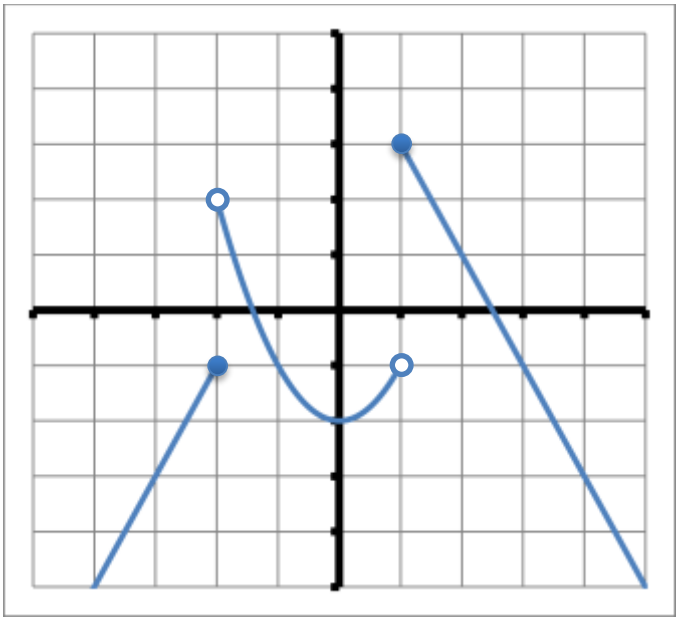
B. $\left[\frac{3}{2}, \infty\right)$

C. $\left[\frac{2}{3}, \infty\right)$

D. $\left(-\infty, \frac{2}{3}\right]$

E. $[0, \infty)$

38. Which of the following statements about the graph of f is/are true?



I.	Increasing intervals: $(-\infty, -2] \cup [0, 1)$
II.	Range: $(-\infty, 3]$
III.	y-intecept: $(0, 2)$

A. I only

B. I and II only

C. I and III only

D. I, II, and III

E. None are true

39. Find the vertex of the parabola and determine whether it is a minimum or maximum.

$$f(x) = 3(x + 2)(x - 10)$$

A. $(4, -108)$; minimum

B. $(-4, -84)$; maximum

C. $\left(\frac{4}{3}, -\frac{260}{3}\right)$; minimum

D. $(4, -108)$; maximum

E. $(-4, -84)$; minimum

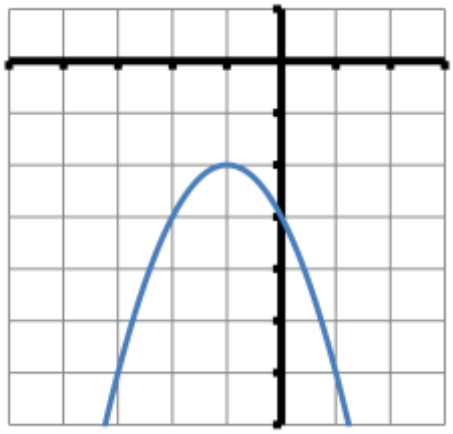
40. If $x < 0$ and $y > 0$, which of the following inequalities is/are true?

I.	$x^2y > 0$
II.	$\frac{y-x}{xy} < 0$
III.	$y(x-y) < 0$

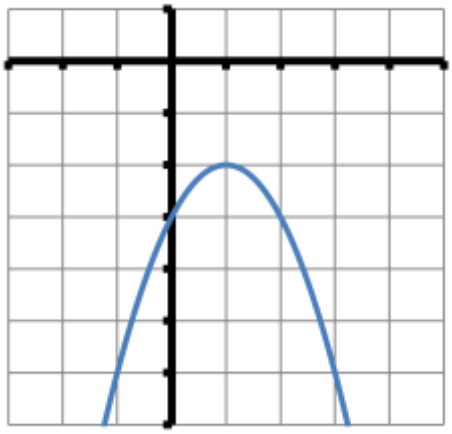
A. I and II only
B. I and III only
C. II and III only
D. I, II, and III
E. None of the above

41. If $f(x) = x^2$, which of the following graphs represents $-f(x+1) - 2$

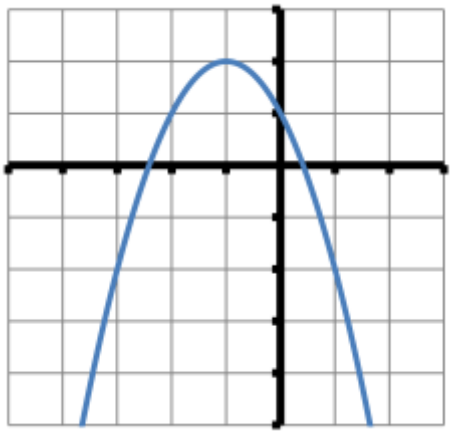
A.



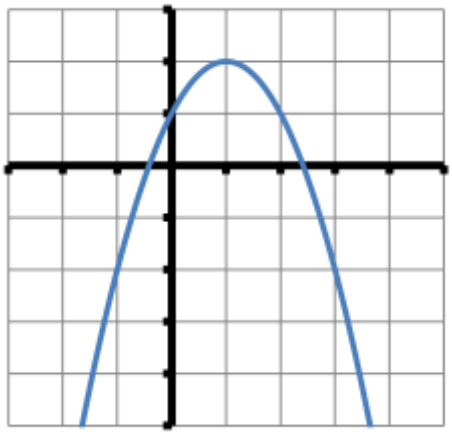
B.



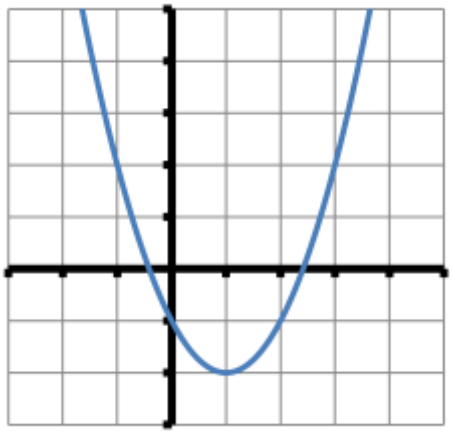
C.



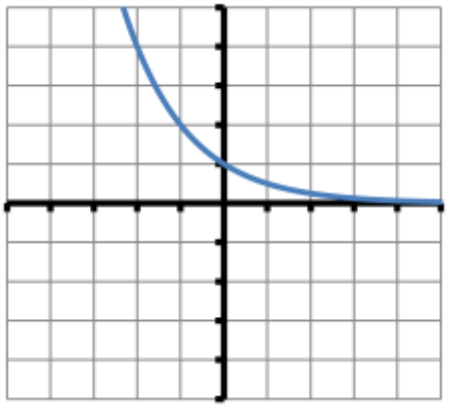
D.



E.



42. Given below is the graph of which of the following functions?



A. $f(x) = \left(\frac{1}{2}\right)^x$

B. $g(x) = 2^x$

C. $h(x) = -2^x$

D. $j(x) = -\left(\frac{1}{2}\right)^x$

E. $k(x) = 1 - 2^x$

43. Express as one logarithm: $\log\left(\frac{x^2}{y^3}\right) - \log(xy) - 4\log\sqrt{y}$

A. $\log\left(\frac{x}{y^2}\right)$

B. $\log\left(\frac{x}{y^6}\right)$

C. $\log x^3$

D. $\log\left(\frac{x}{y^8}\right)$

E. $-4\log\left(\frac{x^2}{y^3} - xy - \sqrt{y}\right)$

44. Which of the following statements is/are true of the function $f(x) = \log_2 x$?

I.	f is an increasing function
II.	f has a zero at $x = 1$
III.	f has a y-intercept at $(0, 1)$
IV.	The domain of f is $(-\infty, \infty)$

A. I and II only

B. I and III only

C. I and IV only

D. II and III only

E. II and IV only

45. Which of the following is equivalent to $\log\left(\frac{z^3}{x\sqrt{y}}\right)$?

A. $3\log z - \log x - \frac{1}{2}\log y$

B. $\frac{3}{2}\log(z - xy)$

C. $3\log z - \log x - 2\log y$

D. $\frac{3}{2}\log(z - x + y)$

E. $3\log z - \log x + \frac{1}{2}\log y$

46. Solve for x: $3^{x-5} = 4$.

A. $x = \log 4 + 5\log 3$

B. $x = 5 + \log\left(\frac{4}{3}\right)$

C. $x = 5 + \frac{\log 4}{\log 3}$

D. $x = 5 + \log 4$

E. $x = \frac{5+\log 4}{\log 3}$

47. Solve for x: $\log_3 \sqrt{2x + 3} = 2$

A. $x = \frac{5}{2}$

B. $x = \frac{3}{2}$

C. $x = 39$

D. $x = 17$

E. $x = 3$

48. Given that $\log_3 m = 8, \log_3 n = 10,$ and $\log_3 p = 6$, calculate $\log_3 \left(\frac{\sqrt{mn}}{p^3}\right)$

A. -9

B. $\frac{2\sqrt{5}}{27}$

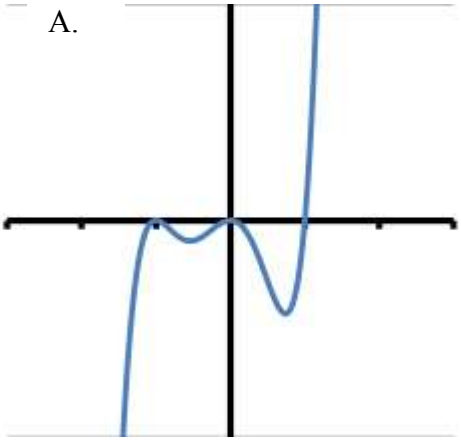
C. 22

D. -56

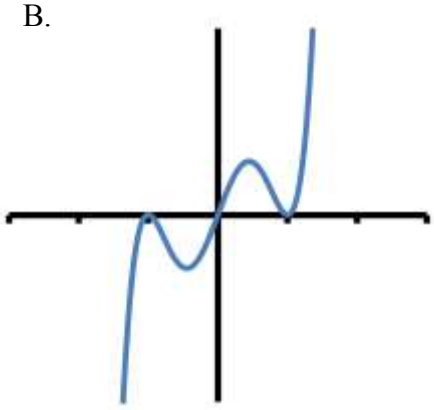
E. -4

49. Which of the following is the graph of the function $f(x) = x^2(x-1)(x+1)^2$?

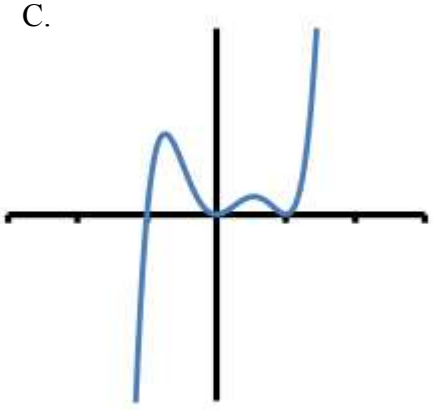
A.



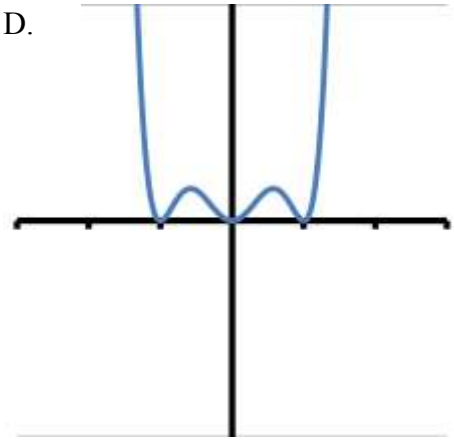
B.



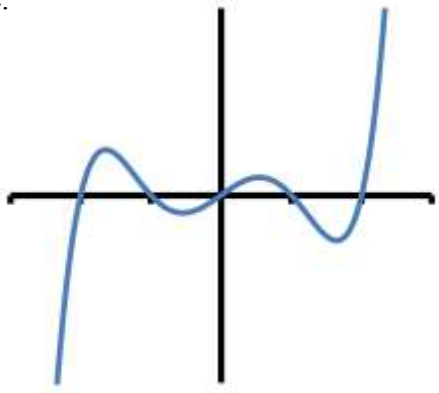
C.



D.



E.



50. Which of the following statements is/are true regarding the graph of $f(x) = 2 + 2^x$?

I.	$f(x) = 0$, when $x = -1$
II.	$f(0) = 2$
III.	The domain of f is $(2, \infty)$
IV.	f is an increasing function

A. I only
B. II only
C. III only
D. IV only
E. I, II, and IV only

51. Which of the following systems has no solution?

A. $\begin{cases} 2x + 3y = 8 \\ 3x - 2y = 4 \end{cases}$
B. $\begin{cases} 3x + 4y = 5 \\ 6x + 4y = 10 \end{cases}$
C. $\begin{cases} 2x - 3y = 4 \\ -4x + 6y = 3 \end{cases}$
D. $\begin{cases} x - 4y = 6 \\ 2x - 4y = 6 \end{cases}$
E. $\begin{cases} 3x - 2y = 4 \\ 6x + 4y = 8 \end{cases}$

52. Solve the system of equations $\begin{cases} x^2 + y^2 = 25 \\ y = x^2 - 5 \end{cases}$ and determine which of the following statements is/are true regarding the solution(s).

I.	One solution is an x-intercept.
II.	There are three solutions.
III.	All solutions are above the x-axis.

A. I only
B. II only
C. I and III only
D. II and III only
E. I, II, and III

53. The value of a rare book is increasing linearly. It was worth \$54 in 1981 and \$62 in 1983. What is the formula for the value (v) of the book t years after 1980?

A. $v = 50 + 4t$

B. $v = 48 + 3t$

C. $v = 50 + 3t$

D. $v = 51 + 4t$

E. None of the above

54. If $f(x) = -x^2 + x + 2$, find $\frac{f(x+h)-f(x)}{h}$.

A. $-2x - h$

B. $-h^2$

C. $-2x - h^2 + h$

D. $-h + 1$

E. $-2x - h + 1$

55. An aquarium in the shape of a rectangular box is to have a height of 1.5 feet and a volume of 6 cubic feet. Let x denote the length of the base and y the width of the base. Express y as a function of x.

A. $y = 1.5x$

B. $y = \frac{4}{x}$

C. $y = x^2$

D. $y = \frac{6}{x}$

E. $y = 9x$

56. If $\log_x 2 = 5$, solve for x. Write your answer correct to four decimal places.

A. 2.2361
B. 1.4142
C. 0.6990
D. 1.1487
E. 0.3010

57. Solve the inequality:

$$2|-11-7x|-2 \geq 10$$

A. $\left[-\frac{17}{7}, -\frac{5}{7}\right]$
B. $\left(-\infty, -\frac{17}{7}\right] \cup \left[-\frac{5}{7}, \infty\right)$
C. $\left[\frac{5}{7}, \frac{17}{7}\right]$
D. $(-3,5); (-1,-3)$
E. $(5,21);\ (-1,-5)$

58. Solve $x^2 + 5x - 6 > 0$ and express the solutions in interval notation.

A. $(-\infty, 2] \cup [3, \infty)$
B. $[2,3]$
C. $(-\infty, -6] \cup [1, \infty)$
D. $(-6,1)$
E. $(-\infty, -6) \cup (1, \infty)$

59. Solve for x and choose the answer that best describes the solution(s).

$$x = 4 + \sqrt{4x - 19}$$

A. There is one solution. It is negative.

B. There are two solutions. Both are positive.

C. There is one solution. It is positive.

D. There are two solutions. One is positive and one is negative.

E. There is no solution for x.

60. Which of the following equations is/are true?

I.	$\ln 0 = 1$
II.	$10^{\log 8} = 8$
III.	$\log_4 8 = 2$

A. I only

B. II only

C. III only

D. I, II, and III

E. None of the equations are true

61. Which of the following is a factor of $6x^2 - 5x + 1$?

A. $x + 1$

B. $x - 1$

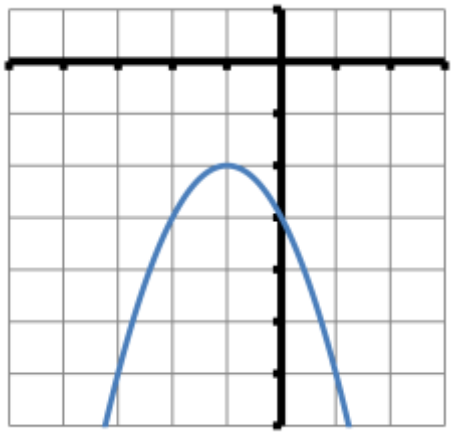
C. $2x + 1$

D. $2x - 1$

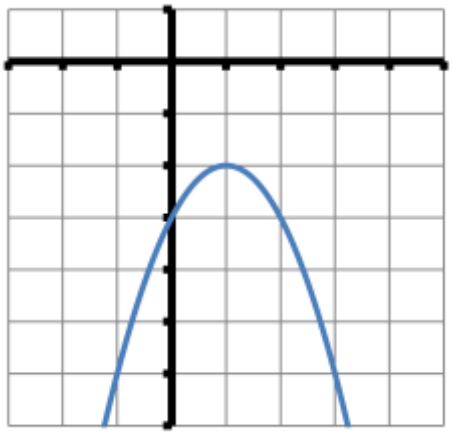
E. $6x - 1$

62. Which of the following is the graph of $f(x) = -x^2 - 2x - 3$

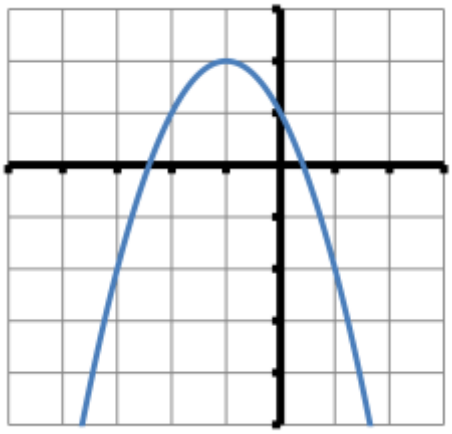
A.



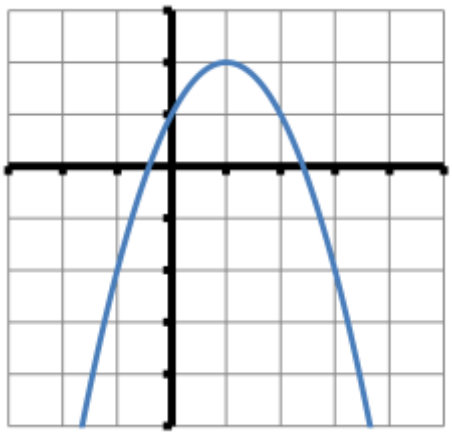
B.



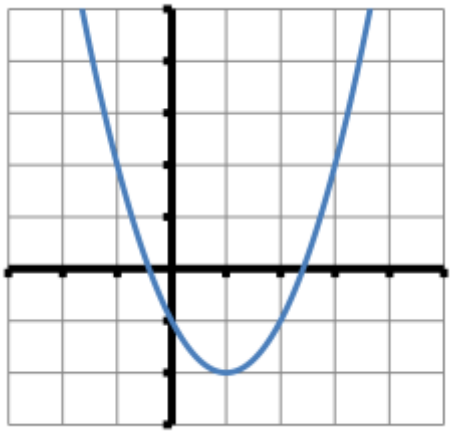
C.



D.



E.



63. Which of the following equations is/are true?

I.	$\log_5 1 = \frac{1}{5}$
II.	$\log_{11} 11^2 = 2$
III.	$\ln e = 1$

A. I and II only
B. II and III only
C. I and III only
D. I, II, and III
E. None of the equations are true

64. If $f(x) = \sqrt{2-3x}$ and $g(x) = \frac{1}{x^2}$, find $(g \circ f)(0)$.

A. $(g \circ f)(0) = 0$

B. $(g \circ f)(0) = \sqrt{2}$

C. $(g \circ f)(0) = \frac{1}{2}$

D. $(g \circ f)(0) = \frac{1}{4}$

E. $(g \circ f)(0)$ is undefined

65. Which of the following statements is/are true about the function $f(x) = \log_2 x$?

I.	The graph of the f is always increasing
II.	The range of $f(x)$ is $(-\infty, \infty)$
III.	The graph of the f crosses the y-axis at $(0, 1)$

A. I only

B. II only

C. I and II only

D. I and III only

E. II and III only

66. Solve $81x^2 \geq 16x$ and express the solutions in interval notation.

A. $(-\infty, 0] \cup \left[\frac{16}{81}, \infty\right)$

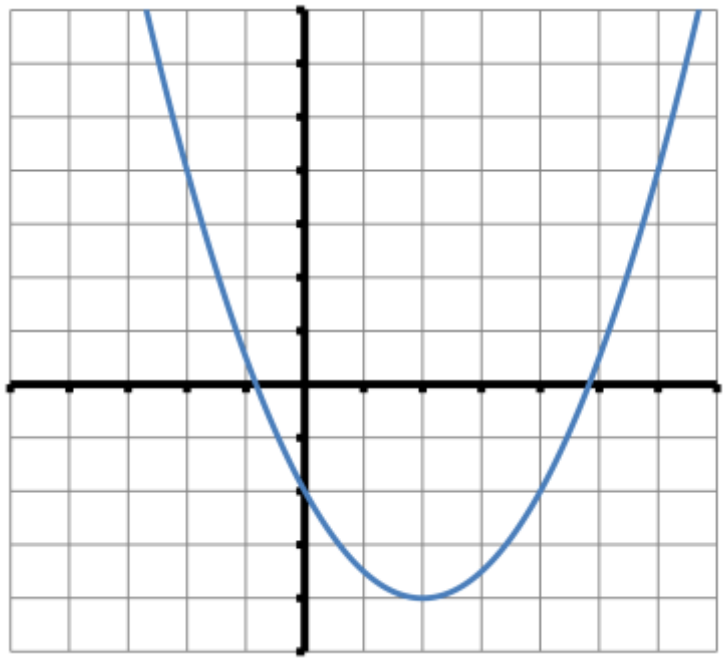
B. $\left[-\frac{4}{9}, \frac{4}{9}\right]$

C. $(-\infty, \infty)$

D. $\left[\frac{16}{81}, \infty\right)$

E. $\left(-\infty, -\frac{4}{9}\right] \cup \left[\frac{4}{9}, \infty\right)$

67. Find the function whose graph is given below.



A. $f(x) = \frac{1}{2}x^2 + 2x - 2$

B. $f(x) = -x^2 + 4x - 2$

C. $f(x) = x^2 - 4x - 2$

D. $f(x) - \frac{1}{2}x^2 - 2x + 2$

E. $f(x) = \frac{1}{2}x^2 - 2x - 2$

68. Solve $\frac{x^2(3-x)}{x+2} > 0$ and express the solutions in interval notation.

A. $(-2, 3]$

B. $(-2, 0\,] \cup [0, 3)$

C. $(-\infty, -2) \cup (3, \infty)$

D. $(-2, 3)$

E. $(-2, 0) \cup (0, 3)$

69. Solve $\frac{(4-x)^2}{x^2} \geq 0$ and express the solutions in interval notation.

A. $(-\infty, \infty)$

B. $(-\infty, 4) \cup (4, \infty)$

C. $(-\infty, 0) \cup (0, \infty)$

D. $(-\infty, 0] \cup [4, \infty)$

E. $(0, \infty)$

70. If $f(x) = 8x - 1$ and $g(x) = \sqrt{x-2}$ find $(f \circ g)(2)$.

A. $(f \circ g)(2) = 2$

B. $(f \circ g)(2) = 0$

C. $(f \circ g)(2) = -1$

D. $(f \circ g)(2) = 7$

E. $(f \circ g)(2)$ is undefined

71. Solve the system. Indicate the number of times the graphs intersect.

$$\begin{cases} x^2 + y^2 = 25 \\ 3x + 4y = 25 \end{cases}$$

A. 0

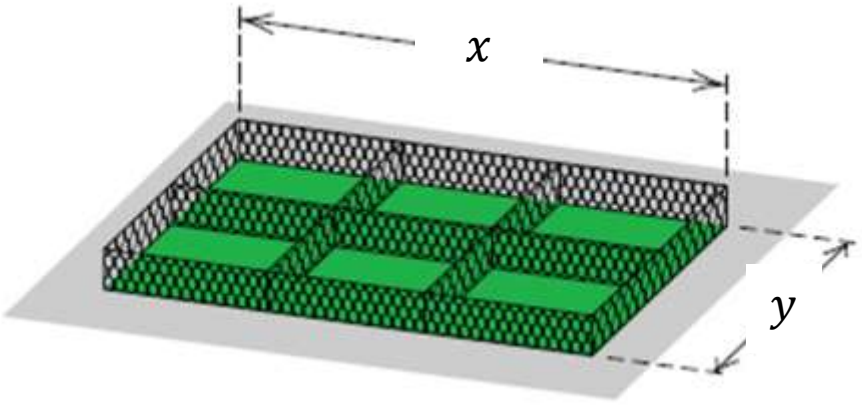
B. 1

C. 2

D. 3

E. 4

72. Eight hundred feet of chain-link fence is to be used to construct six animal cages, as shown in the figure. Find the dimensions that maximize the enclosed area.



A. $x = \frac{3}{800}; y = \frac{639{,}991}{3200}$

B. $x = 200; y = 200$

C. $x = \frac{400}{3}; y = 100$

D. $x = 100; y = 125$

E. $x = \frac{800}{3}; y = 200$

73. A certain city charges \$0.00361 per gallon of water used, up to 5,000 gallons, and \$0.00417 per gallon of water used for more than 5,000 gallons. Find a piecewise-defined function B that specifies the total bill for water usage of x gallons.

A. $B(x) = \begin{cases} 0.00361, & if\ x \leq 5{,}000 \\ 0.00417, & if\ x > 5{,}000 \end{cases}$

B. $B(x) = \begin{cases} 0.00361x, & if\ x \leq 5{,}000 \\ 0.00417x, & if\ x > 5{,}000 \end{cases}$

C. $B(x) = \begin{cases} 0.00361x, & if\ x \leq 5{,}000 \\ 0.00778x, & if\ x > 5{,}000 \end{cases}$

D. $B(x) = \begin{cases} 0.00361x, & if\ x \leq 5{,}000 \\ 0.00417x - 2.8, & if\ x > 5{,}000 \end{cases}$

E. $B(x) = \begin{cases} 0.00361x, & if\ x \leq 5{,}000 \\ 0.00417x + 18.05, & if\ x > 5{,}000 \end{cases}$

74. A woman rows a boat 1.75 miles upstream against a constant current in 35 minutes. She then rows the same distance downstream (with the same current) in 15 minutes. What is the rate of the current?

A. 2 mph

B. 5 mph

C. $\frac{1}{30}$ mph

D. 1 mph

E. $\frac{17}{60}$ mph

75. To fill an order for 150 office desks, a furniture distributor must ship the desks from two warehouses. The shipping cost per desk is \$48 from the western warehouse and \$70 from the eastern warehouse. If the total shipping charge is \$8,410, how many desks were shipped from the eastern warehouse?

A. 55

B. 80

C. 70

D. 95

E. 100

76. If $x = 0$, which of the following functions is/are undefined?

$$f(x) = \frac{1}{x}$$
$$g(x) = \sqrt{x}$$
$$h(x) = \log x$$
$$k(x) = \frac{x}{2}$$

A. f and g only
B. f and h only
C. g and h only
D. g and k only
E. h and k only

77. Solve $10x^2 + 11x > 6$ and express the solution in interval notation.

A. $\left[-\frac{3}{2}, \frac{2}{5}\right]$
B. $\left(-\infty, -\frac{3}{2}\right) \cup \left(\frac{2}{5}, \infty\right)$
C. $(-\infty, \infty)$
D. $\left(-\frac{3}{2}, \frac{2}{5}\right)$
E. $\left(-\infty, -\frac{3}{2}\right] \cup \left[\frac{2}{5}, \infty\right)$

78. Solve $P + N = \frac{C+2}{C}$ for C.

A. $C = \frac{2}{P+N}$
B. $C = \frac{PN}{2}$
C. $C = \frac{2}{PN-1}$
D. $C = \frac{P+N}{2}$
E. $C = \frac{2}{P+N-1}$

79. Express the number in the form $\frac{a}{b}$, where a and b are integers:

$$-2^2 + \left(\frac{1}{2}\right)^0 + 16^{-\frac{3}{4}}$$

A. -11

B. $-\frac{31}{8}$

C. $\frac{33}{8}$

D. $\frac{41}{8}$

E. $-\frac{23}{8}$

80. Simplify; do not include negative exponents in your final answer.

$$\frac{x + x^{-2}}{1 + x^{-2}}$$

A. x

B. $x + 1$

C. $\frac{x(x+1)}{x^2+1}$

D. $\frac{x^3+1}{x^2+1}$

E. $\frac{x}{x+1}$

ANSWERS

1. D	2. C	3. A	4. C
5. D	6. D	7. D	8. C
9. B	10. E	11. A	12. C
13. B	14. E	15. A	16. A
17. D	18. B	19. E	20. D
21. E	22. A	23. A	24. E
25. A	26. C	27. D	28. A
29. D	30. C	31. D	32. B
33. C	34. B	35. C	36. D
37. C	38. B	39. A	40. D
41. A	42. A	43. B	44. A
45. A	46. C	47. C	48. A
49. A	50. D	51. C	52. B
53. A	54. E	55. B	56. D
57. B	58. E	59. B	60. B
61. D	62. A	63. B	64. C
65. C	66. A	67. E	68. E
69. C	70. C	71. B	72. C
73. D	74. A	75. A	76. B
77. B	78. E	79. E	80. D