Test#1 Review

Multiple Choice
Identify the choice that best completes the statement or answers the question.

1. Solve the equation. Check the result.
   \[9(3a - 2) - 4(5a + 3) = 26\]
   a. 11  b. 12  c. 7  d. 6  e. 8

2. Solve the equation. Check the result.
   \[\frac{6 - t}{3} - \frac{5t}{2} = 3 + \frac{t + 1}{5}\]
   a. \(-\frac{91}{36}\)  b. 36  c. \(\frac{91}{36}\)  d. \(-91\)  e. \(-\frac{36}{91}\)

3. Solve the formula for the specified variable.
   \[A = \frac{1}{2} h (B_1 + B_2)\] for \(B_1\)
   a. \(\frac{A}{h} - B_2\)  b. \(\frac{A}{h} + B_2\)  c. \(\frac{2A}{h} - B_2\)
   d. \(\frac{2A}{h} + B_2\)  e. \(\frac{1}{h} + B_2\)

4. The graph in the following illustration shows the depths of a submarine at certain times.
   
   Where is the sub 2 hours after launch?
   a. -500 ft  b. 1,000 ft  c. 500 ft  d. -1,000 ft  e. on the surface

5. Find the midpoint of line segment \(PQ\).
   \(P(-2,-4), Q(-10,7)\)
   a. \((-6,1.5)\)  b. \((-1.5,-1.5)\)  c. \((10,7)\)
   d. \((6,1.5)\)  e. \((1.5,-6)\)

6. If (-1,3) is the midpoint of segment \(PQ\) and the coordinates of \(P\) are \((-8,3)\), find the coordinates of \(Q\).
   a. \((6,3)\)  b. \((-8,3)\)  c. \((3,-3)\)  d. \((3,6)\)
   e. \((-1,-3)\)
7. Refer to the graph.

What are the intercepts of the line?

a. (2,0):(0,4)  b. (-2,0):(0,4)  c. (0,2):(-4,0)

8. Consider the linear equation $6x - 4y = -12$.

Does its graph pass through (4,6)?

a. no  b. yes

9. Graph the equation using the intercept method.

Label the intercepts on the graph.

$3x + 4y - 8 = 0$

10. Refer to the graph.
13. Determine whether the line that passes through the two given points is parallel or perpendicular (or neither) to a line with a slope of -2.

(6, 1), (8, 2)

a. parallel b. perpendicular c. neither

14. Determine whether the line that passes through the two given points is parallel or perpendicular (or neither) to a line with a slope of -2.

(2, 4), (3, 6)

a. parallel b. neither c. perpendicular

15. Write an equation in slope-intercept form of the line with the given properties.

\[ \begin{array}{c|c}
 x & y \\
 \hline
 2 & 3 \\
 0 & -4 \\
\end{array} \]

a. \( y = \frac{2}{7}x - 4 \) b. \( y = \frac{2}{7}x + 4 \) c. \( y = \frac{7}{2}x + 4 \)

d. \( y = x - 4 \) e. \( y = \frac{7}{2}x - 4 \)

16. Find the slope of the line determined by the equation.

\( 3x - 2y = 6 \)

a. 3 b. \( -\frac{3}{2} \) c. \( -\frac{2}{3} \) d. \( \frac{2}{3} \) e. \( \frac{3}{2} \)

17. Determine whether the graphs of the pair of equations are parallel, perpendicular, or neither.

\( 7x + 6y = 9, \ 6x - 7y = 6 \)

a. perpendicular b. parallel c. neither

13. Which line has a negative slope?

a. \( l_2 \) b. \( l_1 \) c. \( l_3 \) d. \( l_4 \)

11. Find the slope of the line.

a. \( \frac{1}{5} \) b. \( \frac{4}{3} \) c. \( -\frac{1}{3} \) d. \( \frac{1}{3} \) e. \( \frac{7}{3} \)

12. Find the slope of the line that passes through the given points, if possible.

(-9, -2), (-9, -6)

a. \( -\frac{1}{6} \) b. 9 c. 0 d. \( \frac{1}{2} \) e. undefined
18. Find an equation of the line that passes through the given point and is parallel to the given line. Write the equation in slope-intercept form.

\((-7, 2); y = -4x - 12\)

a. \(y = -4x - 12\)  
b. \(y = -4x - 26\)  
c. \(y = 4x - 26\)  
d. \(y = -7x - 26\)  
e. \(y = 7x - 12\)

19. Find an equation of the line that passes through the given point and is perpendicular to the given line. Write the equation in slope-intercept form.

\((-12, 3), 3x = -y - 12\)

a. \(y = \frac{1}{3}x + 12\)  
b. \(y = \frac{1}{3}x + 7\)  
c. \(y = 3x + 7\)  
d. \(y = -\frac{1}{3}x + 7\)  
e. \(y = -3x - 7\)

20. Write an equation in slope-intercept form of the line that passes through \((-4, 5)\) and \((2, -6)\).

a. \(y = \frac{11}{6}x - \frac{7}{3}\)  
b. \(y = -\frac{7}{3}x + \frac{11}{6}\)  
c. \(y = -\frac{7}{3}x - \frac{11}{6}\)  
d. \(y = -\frac{11}{6}x - \frac{7}{3}\)  
e. \(y = \frac{11}{6}x + \frac{7}{3}\)

21. Determine whether the table defines \(y\) as a function of \(x\).

<table>
<thead>
<tr>
<th>(x)</th>
<th>(y)</th>
</tr>
</thead>
<tbody>
<tr>
<td>-3</td>
<td>5</td>
</tr>
<tr>
<td>3</td>
<td>-5</td>
</tr>
<tr>
<td>-5</td>
<td>3</td>
</tr>
<tr>
<td>5</td>
<td>-3</td>
</tr>
</tbody>
</table>

a. no  
b. yes

22. Determine whether the equation defines \(y\) to be a function of \(x\).

\(y = 3 - 4x^2\)

a. yes  
b. no

23. Find \(g(3)\).

\(g(x) = 2x^2 - x\)

a. 16  
b. 12  
c. 15  
d. 17  
e. 11

24. Find the domain and range of the function.

\{(-3, 8), (4, 5), (7, 8)\}

a. \(D = \{-4, 5, 8\}, R = \{4, -5, 8\}\)  
b. \(D = \{4, 5, 8\}, R = \{-3, 4, 7\}\)  
c. \(D = \{3, 4, 7\}, R = \{4, 5, 8\}\)  
d. \(D = \{-3, 4, 7\}, R = \{5, 8\}\)  
e. \(D = \{-3, 4, 7\}, R = \{4, 5, 8\}\)

25. Determine whether the graph is the graph of a function.

(a)
26. Determine whether the graph is the graph of a function.

![Graph Image]

a. not a function  b. a function

27. The graph of \( f(x) = |x + 3| \) is the same as the graph of \( f(x) = |x| \) except that it is shifted 3 units ________.

a. up  b. to the right  c. to the left  d. down

28. Refer to the graph to find the values of \( x \) for which \( h(x) = 0 \).

![Graph Image]

a. 1  b. \(-5, 3\)  c. 0  d. 0, \(-2\)  e. \(-3\)

29. Sketch the graph of the associated function, \( g(x) = -|x| \) then draw the graph of the function \( f \) using a translation and/or a reflection, and give its domain and range.

\[ f(x) = -|x| + 2 \]

a. \( D = \) the set of all real numbers greater than or equal to 2
\( R = \) the set of all real numbers

b. \( D = \) the set of all real numbers
\( R = \) the set of all real numbers less than or equal to 2

c. \( D = \) the set of all real numbers less than or equal to 2
\( R = \) the set of all real numbers

d. \( D = \) the set of all real numbers greater than or equal to 2
\( R = \) the set of all real numbers less than or equal to 2

e. \( D = \) the set of all real numbers
\( R = \) the set of all real numbers greater than or equal to 2

30. Sketch the graph of the associated function, \( g(x) = |x| \) then draw the graph of the function \( f \) using translation and/or a reflection.

\[ f(x) = |x - 4| - 1 \]

![Graph Image]
31. When a system of equations has at least one solution, it is called a(n) ________ system.

If a system has no solutions, it is called a(n) ________ system.

a. One solution: dependent system.
   No solutions: independent system.
b. One solution: equivalent system.
   No solutions: break-even system.
c. One solution: consistent system.
   No solutions: inconsistent system.
d. One solution: independent system.
   No solutions: dependent system.
e. One solution: inconsistent system.
   No solutions: consistent system.
f. One solution: break-even system.
   No solutions: equivalent system.

32. Refer to the illustration. Answer the questions.

How many solutions does the system of equations have?

Are the equations dependent or independent?

a. no solution, independent equations
b. no solution, dependent equations  c. infinite number of solutions, dependent equations  d. two solutions, independent equations  e. one solution, independent equations

33. Solve the system by graphing.
34. Solve the system by substitution, if possible.
\[
\begin{align*}
x + 2y &= 12 \\
3x - y &= -13
\end{align*}
\]
(a) (-2, 7)  (b) (7, 2)  (c) (2, 7)  (d) infinitely many solutions, dependent equations  (e) no solution, inconsistent system

35. Solve the system by elimination if possible.
\[
\begin{align*}
2x + 3y &= 20 \\
3x - 2y &= -9
\end{align*}
\]
(a) (1, 6)  (b) (1, -6)  (c) (6, 1)  (d) infinitely many solutions, dependent equations  (e) no solution, inconsistent system
36. Solve the system by any method, if possible.
\[
\begin{align*}
0.1x - 0.05y &= 0.2 \\
2x - 4 &= y
\end{align*}
\]
\(a. \ \left(\frac{3}{2}, 0.2\right)\) \(b. \ \left(0.1, \frac{3}{2}\right)\) \(c. \ \left(0.2, \frac{3}{2}\right)\)

d. infinitely many solutions, dependent equations
e. no solution, inconsistent system

37. Solve the system by any method, if possible.
\[
\begin{align*}
\frac{3}{2}x + \frac{2}{3}y &= 26 \\
\frac{3}{5}x - \frac{1}{3}y &= 14
\end{align*}
\]
a. \((20, -6)\) \(b. \ (20, 6)\) \(c. \ (20, -4)\) \(d. \) infinitely many solutions, dependent equations \(e. \) no solution, inconsistent system

38. Solve the system by any method, if possible.
\[
\begin{align*}
12x - 5y - 31 &= 0 \\
\frac{3}{4}x - \frac{4}{3}y &= \frac{35}{8}
\end{align*}
\]
a. \(\left(\frac{1}{2}, 5\right)\) \(b. \ \left(\frac{1}{2}, -5\right)\) \(c. \ \left(\frac{1}{2}, -4\right)\) \(d. \) infinitely many solutions, dependent equations \(e. \) no solution, inconsistent system

39. Determine whether the given ordered triple is a solution of given system.
\[
\begin{align*}
2x + 2y + 3z &= -2 \\
3x + y - z &= -4 \\
x + y + 2z &= 0
\end{align*}
\]
\(a. \) no \(b. \) yes

40. Solve the system. Give your answer as an ordered triple in the form of \((a, b, c)\).
\[
\begin{align*}
0.02a &= 0.02 - 0.03b - 0.01c \\
4a + 6b + 2c - 5 &= 0 \\
a + c &= 3 + 2b
\end{align*}
\]
a. \((2, 0, -3)\) \(b. \ (2, 0, 3)\) \(c. \ (-2, 0, 3)\) \(d. \) The system is inconsistent \(e. \) The equations are dependent

41. For the system 
\[
\begin{align*}
3x + 2y &= 1, D_x = -7, \\
7x - y &= 3 \\
D_y = 2 \text{ and } D = -17. \text{ What is the solution of the system?}
\end{align*}
\]
a. \(\left(-\frac{2}{17}, \frac{7}{17}\right)\) \(b. \ \left(-\frac{7}{17}, \frac{2}{17}\right)\) \(c. \ \left(\frac{7}{17}, \frac{2}{17}\right)\)

d. \(\left(\frac{2}{17}, -\frac{7}{17}\right)\) \(e. \ \left(\frac{7}{17}, -\frac{2}{17}\right)\)

42. Evaluate the determinant.
\[
\begin{vmatrix}
1 & -2 & 3 \\
-2 & 1 & 1 \\
-3 & -2 & 1
\end{vmatrix}
\]
a. \(22\) \(b. \ 24\) \(c. \ 27\) \(d. \ 23\) \(e. \ 26\)

43. Use Cramer's rule to solve the system of equations, if possible.
\[
\begin{align*}
x + 2y + 2z &= 7 \\
2x + y + 2z &= 6 \\
2x + 2y + z &= -3
\end{align*}
\]
a. \((-3, -2, 7)\) \(b. \ (-3, 2, -7)\) \(c. \ (3, -2, 7)\)

d. dependent \(e. \) inconsistent
44. Solve the inequality and graph the solution set.

\[ \frac{1}{2}x + 9 \geq 7 + 4x \]

a. \( \left[ \frac{4}{7}, \infty \right) \)

b. \( (-\infty, \frac{4}{7}] \)

c. \( (-\infty, \frac{4}{7}) \)

d. \( (-\infty, \infty) \)

e. \( \emptyset \)
45. Solve the compound inequality. Graph the solution set (if one exists) and write it using interval notation.

\[-4(x + 2) \geq 16 \text{ or } 2x + 5 < 9\]

a. \((-\infty, 2]\)

b. \((-\infty, -6]\cup(2,\infty)\)

c. \([-6,2)\)

d. \((-\infty, -6]\)

e. \((-6,2]\)

46. Solve the compound inequality. Graph the solution set (if one exists) and write it using interval notation.

\[-3x < \ - \ 4x \ \text{ and } \ 9x > 8x\]

a. \((-\infty, 0)\cup(0,\infty)\)

b. \(x = 0\)

c. \((-\infty, 0)\)

d. \((0, \infty)\)

e. \(\emptyset\)
47. Solve the compound inequality. Graph the solution set (if one exists) and write it using interval notation.

\[ 4(x + 1) \leq 3(x + 2) \text{ and } x + 12 < -3 \]

a. \((-\infty, 2]\)

b. \([-15, 2]\)

c. \((-15, 2]\)

d. \((-15, 2))

e. \((-\infty, -15)\)

48. Solve the compound inequality. Graph the solution set (if one exists) and write it using interval notation.

\[ -12 \leq \frac{25 - 7x}{2} \leq 12 \]

e. \(\emptyset\)

49. Solve the equation.

\[ \left| \frac{7}{2} x + 3 \right| = -5 \]

a. \(x = 5\)  
b. \(x = -7\)  
c. \(x = \frac{3}{5}, -5\)  
d. \(x = \frac{3}{5}, -7\)

e. no solution
50. Solve the inequality. Graph the solution set and write it using interval notation.

\[ |5x - 13| < -6 \]

- a. \( x \in \left( -\frac{13}{5}, \frac{19}{5} \right) \);

- b. \( x \in \left( -\frac{13}{5}, \infty \right) \);

- c. \( x \in \left( -\infty, \frac{19}{5} \right) \);

- d. \( x \in \left( -\infty, -\frac{13}{5} \right) \cup \left( \frac{19}{5}, \infty \right) \);

- e. no solution;

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

\[ |3x + 4| + 2 < 9 \]

- a. \( x \in \left( -\frac{5}{3}, -1 \right) \);

- b. \( x \in (-5, 1) \);

- c. \( x \in \left( -\infty, -\frac{11}{3} \right) \cup (1, \infty) \);

- d. \( x \in \left( -\frac{11}{3}, \frac{5}{3} \right) \);

- e. no solution;
52. Solve the inequality. Graph the solution set and write it using interval notation.

\[ |6 - 5x| \geq 11 \]

a. \( x \in (-1, \infty) \);

b. \( x \in \left[ -1, \frac{17}{5} \right] \);

c. \( x \in (-\infty, -1] \cup \left[ \frac{17}{5}, \infty \right) \);

d. \( x \in \left( -\infty, \frac{17}{5} \right) \);

e. no solution;

53. Graph the inequality.

\[ 4x - y > 2 + y \]

54. Graph the inequality.
\[ \frac{x}{5} - \frac{y}{4} \geq 1 \]

55. Simplify the expression.

\[ \left( \frac{r^5}{s} \right)^2 \]

a. \( r^7 s^3 \)  
   b. \( \frac{r^{10}}{s^2} \)  
   c. \( r^5 s^2 \)  
   d. \( r^{10} s^3 \)  
   e. \( r^{10} s^2 \)

56. Simplify the expression. Assume that variables represent nonzero real numbers. Write the answer using positive exponents only.

\[ \left( \frac{a^2}{b^3} \right)^{-5} \]

a. \( \frac{b^{15}}{a^{10}} \)  
   b. \( \frac{a^{10}}{b^{15}} \)  
   c. \( \frac{a^{10}}{b^{15}} \)  
   d. \( \frac{a^{-10}}{b^{-15}} \)  
   e. \( \frac{b^{10}}{a^{15}} \)
57. Find the domain and range of \( f \).

\( f \) is a function, but the specific expression for \( f \) is not provided in the image. Additional information or context is required to determine the domain and range.

58. Subtract.

\[ (3x^2y^3 + 7xy + 7y^2) - (-5x^2y^3 - 2xy + 5y^2 + y) \]

a. \(-8x^2y^3 + 9xy - 2y^2 + y\)  
b. \(8x^2y^3 + 9xy + 7y^2 - y\)  
c. \(8x^2y^3 + 2xy + 2y^2 - y\)  
d. \(8x^2y^3 - 9xy + 5y^2 + y\)  
e. \(-8x^2y^3 + 9xy + 2y^2 - y\)

59. Perform the indicated operations.

\[ (2x^2 + 3x - 4) + (4x^2 - 2x - 1) - (x^2 + x + 4) \]

a. \(5x^2 - x + 9\)  
b. \(5x^2 - 4\)  
c. \(5x^2 - 9\)  
d. \(5x^2 + x - 9\)  
e. \(2x^2 + 9\)

60. Perform the indicated operation.

\[ \left( \frac{1}{4}y^6 - \frac{1}{6}y^4 - \frac{5}{4}y^2 \right) + \left( -\frac{1}{8}y^6 - \frac{1}{2}y^4 + \frac{7}{8}y^2 \right) \]

a. \(\frac{1}{8}y^6 - \frac{2}{3}y^4 - \frac{3}{4}y^2\)  
b. \(\frac{1}{8}y^6 - \frac{2}{3}y^4 + \frac{3}{4}y^2\)  
c. \(\frac{1}{4}y^6 - \frac{2}{3}y^4 - \frac{3}{8}y^2\)  
d. \(\frac{1}{8}y^6 + \frac{2}{3}y^4 - \frac{3}{8}y^2\)  
e. \(\frac{1}{8}y^6 - \frac{2}{3}y^4 - \frac{3}{8}y^2\)
61. Factor, if possible.
\[20x^2y - 16x^2y^2\]
a. \[x^2y (20 - 16y)\]  
b. \[(5x - 4y)^2\]
c. \[4x^2y (5 - 4y)\]  
d. \[4 (5x^2y - 4x^2y^2)\]
e. prime

62. Factor by grouping.
\[c^2 + dc + c + d\]
a. \[(c^2 + d) (c + 1)\]  
b. \[cd (c + 1)\]  
c. \[d (c^2 + c + 1)\]  
d. \[(c + d) (c + 1)\]
e. \[(c + d) (d + 1)\]

63. Factor.
\[a^3b^2 - 5 + a^3 - 5b^2\]
a. \[a^3 (b^2 - 5)\]  
b. \[ab (a^2b - 5 + a)\]  
c. \[(a^3 - 5) (b^2 - 5)\]  
d. \[(5a^3 + 1) (b^2 - 1)\]
e. \[(a^3 - 5) (b^2 + 1)\]

64. Factor.
\[\frac{4}{5} bx^4 + \frac{1}{5} ax^2 - \frac{3}{5} bx^3\]
a. \[\frac{1}{5} x^2 (4bx^2 + a - 3bx)\]
b. \[\frac{1}{5} (4bx^4 + ax^2 - 3bx^3)\]
c. \[x^2\left(\frac{4}{5} bx^2 + \frac{1}{5} a - \frac{3}{5} bx\right)\]
d. \[\frac{1}{5} x^3 b (4x - 3) + \frac{1}{5} ax^2\]  
e. prime

65. Factor by first grouping the appropriate terms.
\[y^2 + 16y + 64 - z^2\]
a. \[(y + 8 - z) (y + 8 + z)\]  
b. \[(y + 8) (y + 8 + z)\]  
c. \[(y + 8 + z) (y + 8 + z)\]  
d. \[(y + 8 - z) (y - 8 + z)\]
e. \[(y + 8 - z) (y + 8 - z)\]

66. Factor the expression, if possible.
\[25x^4 + 4y^2\]
a. \[(5x^2 - 2y) (2y + 5x^2)\]  
b. \[(2y - 5x^2) (2y - 5x^2)\]  
c. \[(2y + 5x^2) (2y + 5x^2)\]  
d. \[(2y - 5x^2) (2y + 5x^2)\]  
e. prime

67. Factor the expression, if possible.
\[(a + b)z^3 + 64(a + b)\]
a. \[(a + b) (z - 4) (z^2 - 4z + 16)\]  
b. \[(a + b) (z - 4) (z^2 + 4z + 16)\]  
c. \[(a + b) (z + 4) (z^2 + 4z + 16)\]  
d. \[(a + b) (z + 4) (z^2 - 4z + 16)\]  
e. \[(a + b) (z + 1) (z^2 + 4z + 64)\]
68. Use the graph to solve \( x^2 - 2x - 3 = 0 \).

\[ \text{Graph} \]

a. \( x = 0, 3 \)  
b. \( x = -1, 3 \)  
c. \( x = -4, -1 \)  
d. \( x = -3, -1 \)  
e. \( x = -2, 2 \)

69. Solve the equation by first clearing it of fractions.

\[ \frac{7}{2} a^2 = \frac{5}{2} - a \]

a. \( a = 1, a = -\frac{5}{7} \)  
b. \( a = 3, a = \frac{5}{7} \)  
c. \( a = -1, a = \frac{5}{7} \)  
d. \( a = 2, a = \frac{5}{7} \)  
e. \( a = 0, a = -\frac{5}{7} \)

70. Solve the equation.

\( (m + 1)(7m + 1) - 7 = 49m \)

a. \( m = -\frac{7}{11}, m = 2 \)  
b. \( m = \frac{5}{7}, m = -8 \)  
c. \( m = \frac{2}{11}, m = -4 \)  
d. \( m = -\frac{7}{11}, m = 7 \)  
e. \( m = \frac{1}{7}, m = 6 \)

71. Let \( f(x) = x^3 - 3x^2 + 2x + 2 \). For what value(s) of \( x \) is \( f(x) = 2 \)?

a. \( x = 1, x = 3 \)  
b. \( x = 4, x = 1, x = 5 \)  
c. \( x = 2, x = 1, x = 1 \)  
d. \( x = 0, x = 2 \)  
e. \( x = 0, x = 1, x = 2 \)

**Numeric Response**

72. Let \( f(x) = -5x + 8 \).

For what value of \( x \) does function \( f \) have the given value?

\[ f(x) = -7 \]

\[ x = \underline{\text{_______}} \]

73. Simplify the expression. Write the answer using positive exponents.

\[ \frac{1}{4^{-3}} \]
74. Simplify the expression. Write the answer using positive exponents.

\[
\frac{-6t^{-11}t^{-2}}{t^{-13}}
\]

Matching

\{(-2,8),(4,5),(7,8)\} \quad (1) \\
\{(2,3),(-4,-5),(-7,8)\} \quad (2)

Match each domain and range of the functions with the corresponding answer.

a. domain of (1)  

b. domain of (2)  

c. range of (1)  

d. range of (2)

75. \{2,-4,-7\}  

76. \{-2,4,7\}  

77. \{5,8\}  

78. \{3,-5,8\}
Short Answer

79. Refer to the graph.

What is the \(x\)-intercept of the line?

\((\_, \_\_\_\_\_\_\_\_)\)

What is the \(y\)-intercept of the line?

\((\_, \_\_\_\_\_\_\_)\)

80. Find an equation of the line that passes through the given point and is perpendicular to the given line. Write the equation in slope-intercept form.

\((-16, 4), 4x = -y - 14\)

81. Determine whether the relation defines \(y\) to be a function of \(x\).

If it does not, indicate all values of \(x\) that are assigned more than one value of \(y\).

82. Determine whether the relation defines \(y\) to be a function of \(x\).

If it does not, indicate all values of \(x\) that are assigned more than one value of \(y\).
83. Find \( g(3) \) and \( g(4) \).

\[
g(x) = 5x^2 - x
\]

\( g(3) = \) __________

\( g(4) = \) __________

84. The graph of \( f(x) = x^3 - 11 \) is the same as the graph of \( f(x) = x^3 \) except that it is shifted __________ units __________.

85. The graph of \( f(x) = |x - 5| \) is the same as the graph of \( f(x) = |x| \) except that it is shifted __________ units to the __________.

86. Solve the system by any method, if possible. If the system is inconsistent or if the equations are dependent, so indicate.

\[
\begin{align*}
\frac{3}{4}x + \frac{2}{3}y &= 3 \\
\frac{3}{5}x - \frac{1}{2}y &= 21
\end{align*}
\]

87. How many pounds of each candy shown in the illustration must be mixed to obtain 64 pounds of candy that would be worth $4 per pound?

Gummy Bears: __________ lb

Jelly Beans: __________ lb

88. Solve the system.

If a system is inconsistent or if the equations are dependent, so indicate.

\[
\begin{align*}
x + \frac{1}{2}y + z &= 8 \\
\frac{1}{2}x - y + \frac{1}{2}z &= -1 \\
x + \frac{1}{2}y - \frac{1}{2}z &= 2
\end{align*}
\]

89. The owner of a home decorating shop wants to mix dried rose petals selling for $6 per pound, dried lavender selling for $5 per pound, and buckwheat hulls selling for $4 per pound to get 10 pounds of a mixture that would sell for $4.50 per pound. She wants to use twice as many pounds of rose petals as lavender. How many pounds of each should she use?

__________ lb of rose petals,

__________ lb of lavender,

__________ lb of buckwheat hulls

90. Use Cramer's rule to solve the system of equations, if possible. If the equations of the system are dependent, or if the system is inconsistent, so indicate.

\[
\begin{align*}
x + 2y + 2z &= 6 \\
2x + y + 2z &= 8 \\
2x + 2y + z &= -4
\end{align*}
\]

91. Simplify the expression. Assume that the variable represents a nonzero real number. Write the answer using a positive exponent only.

\[
2^2 r^{-5} \left( r^9 \right)^2
\]
92. Simplify the expression. Write the answer using positive exponents.

\[
\left( \frac{3a^2 b^4 z^{-3}}{2a^{-1} b^{-3} z^5} \right)^{-3}
\]

93. Simplify the expression. Write the answer using positive exponents.

\[
\frac{(4x^5)^{-2}}{x^{-3} x^{-10} x^0}
\]

94. Write the numbers in scientific notation and perform the operations.

\((91,000,000,000)(4,700,000,000)\)

Give the answer in scientific notation.

\[ \underline{\text{ } \times 10^{\text{ }} } \]

Give the answer in standard notation.

\[ \underline{\text{ }} \]

95. Perform the indicated operation.

\[ 2x^3 - 3x^2 + 5x - 2 \\
-3x^3 + 2x^2 + 2x - 6 \\
+ \ 4x^3 - 7x^2 + 7x - 10 \]

96. Multiply.

\( (3y + 2) (2y^2 + 3y + 2) \)

97. Multiply.

\( -4yz (6y - z) (4y - z) \)

98. Factor.

\[ m^2 + mn + mp + mn + n^2 + pn \]

99. Factor the trinomial, if possible.

\[ 8a^2 + 37a - 15 \]

If the trinomial is prime, so indicate.

100. Factor the trinomial, if possible.

\[ 4x^2 - 8xy - 5y^2 \]

If the trinomial is prime, so indicate.

101. Factor the trinomial, if possible.

\[ 8r^2 + 11rs - 10s^2 \]

If the trinomial is prime, so indicate.

102. Factor the trinomial. Factor out the opposite of the GCF first.

\[ -3p^2 - 9pq + 12q^2 \]

If the trinomial is prime, so indicate.
103. Factor the expression, if possible. Factor out any GCF first (including −1 if the leading coefficient is negative).

\[ 18 - x^2 - 3x \]

If the trinomial is prime, so indicate.

104. Factor the expression, if possible. Factor out any GCF first (including −1 if the leading coefficient is negative).

\[ 25x^2 - 10x + 1 \]

If the trinomial is prime, so indicate.

105. Factor the expression, if possible. Factor out any GCF first (including −1 if the leading coefficient is negative).

\[ 18x^2yz + 60xyz - 48yz \]

If the trinomial is prime, so indicate.

106. Factor the trinomial. Factor out the GCF first.

\[ 15x^6 - 8x^4 - 12x^2 \]

If the trinomial is prime, so indicate.

107. Factor the expression, if possible. Factor out any GCF first (including −1 if the leading coefficient is negative).

\[ 5g^6 + 24g^3 - 36 \]

If the trinomial is prime, so indicate.

108. Factor the expression, if possible. Factor out any GCF first (including −1 if the leading coefficient is negative).

\[ 15n^2(q - r) - 17n(q - r) - 18(q - r) \]

If the expression is prime, so indicate.

109. Factor completely.

\[ 16a^4 - 256b^4 \]

If the binomial is prime, so indicate.

110. Factor.

\[ (a + b)^2 - c^2 \]

If the expression is prime, so indicate.

111. Factor the expression. Factor out any GCF first.

\[ 3x^3 - 27x \]

If the binomial is prime, so indicate.

112. Factor the sum of cubes.

\[ 8p^3 + q^3 \]

If the trinomial is prime, so indicate.

113. Factor the difference of cubes. Factor out the GCF first.

\[ 3n^3 - 375 \]

If the trinomial is prime, so indicate.

114. Factor the expression, if possible.

\[ 49z^4 + 16y^2 \]

If the binomial is prime, so indicate.

115. Factor the expression completely.

\[ 27x^3y^4 - 8y \]

If the expression is prime, so indicate.
116. Factor the expression completely.

\[-2x^2y - 6xy^2 + 10xy\]

If the expression is prime, so indicate.

117. Factor the expression completely.

\[xy - 2ty + xs^2 - 2ts^2\]

If the expression is prime, so indicate.

118. Factor the expression completely.

\[16x^2y^3 + 8xy^3 + y^3\]

If the expression is prime, so indicate.
Test#1 Review
Answer Section

MULTIPLE CHOICE

1. ANS: E PTS: 1 MSC: tgia04.01.05.58m
2. ANS: E PTS: 1 MSC: tgia04.01.05.74m
3. ANS: C PTS: 1 MSC: tgia04.01.06.54m
4. ANS: E PTS: 1 MSC: tgia04.02.01.37am
5. ANS: A PTS: 1 MSC: tgia04.02.01.45m
6. ANS: A PTS: 1 MSC: tgia04.02.01.49m
7. ANS: B PTS: 1 MSC: tgia04.02.02.11am
8. ANS: A PTS: 1 MSC: tgia04.02.02.12cm
9. ANS: B PTS: 1 MSC: tgia04.02.02.37m
10. ANS: A PTS: 1 MSC: tgia04.02.03.11dm
11. ANS: D PTS: 1 MSC: tgia04.02.03.17m
12. ANS: E PTS: 1 MSC: tgia04.02.03.35m
13. ANS: B PTS: 1 MSC: tgia04.02.03.42m
14. ANS: B PTS: 1 MSC: tgia04.02.03.45m
15. ANS: E PTS: 1 MSC: tgia04.02.04.68m
16. ANS: E PTS: 1 MSC: tgia04.02.04.47m
17. ANS: A PTS: 1 MSC: tgia04.02.04.56m
18. ANS: B PTS: 1 MSC: tgia04.02.04.60m
19. ANS: B PTS: 1 MSC: tgia04.02.04.65m
20. ANS: D PTS: 1 MSC: tgia04.02.04.76m
21. ANS: B PTS: 1 MSC: tgia04.02.05.29m
22. ANS: A PTS: 1 MSC: tgia04.02.05.35m
23. ANS: C PTS: 1 MSC: tgia04.02.05.59m
24. ANS: D PTS: 1 MSC: tgia04.02.05.19m
25. ANS: B PTS: 1 MSC: tgia04.02.05.94m
26. ANS: A PTS: 1 MSC: tgia04.02.05.99m
27. ANS: C PTS: 1 MSC: tgia04.02.06.14bm
28. ANS: A PTS: 1 MSC: tgia04.02.06.18cm
29. ANS: B PTS: 1 MSC: tgia04.02.06.42m
30. ANS: E PTS: 1 MSC: tgia04.02.06.47m
31. ANS: C PTS: 1 MSC: tgia04.03.01.02m
32. ANS: A PTS: 1 MSC: tgia04.03.01.07am
33. ANS: D PTS: 1 MSC: tgia04.03.01.27m
34. ANS: A PTS: 1 MSC: tgia04.03.02.17m
35. ANS: A PTS: 1 MSC: tgia04.03.02.25m
36. ANS: D PTS: 1 MSC: tgia04.03.02.41m
37. ANS: A PTS: 1 MSC: tgia04.03.02.49m
38. ANS: B PTS: 1 MSC: tgia04.03.02.55m
39. ANS: B PTS: 1 MSC: tgia04.03.04.12m
40. ANS: D PTS: 1 MSC: tgia04.03.04.44m
41. ANS: E   PTS: 1   MSC: tgia04.03.07.10m
42. ANS: E   PTS: 1   MSC: tgia04.03.07.29m
43. ANS: A   PTS: 1   MSC: tgia04.03.07.54m
44. ANS: C   PTS: 1   MSC: tgia04.04.01.70m
45. ANS: A   PTS: 1   MSC: tgia04.04.02.45m
46. ANS: E   PTS: 1   MSC: tgia04.04.02.55m
47. ANS: E   PTS: 1   MSC: tgia04.04.02.64m
48. ANS: D   PTS: 1   MSC: tgia04.04.02.70m
49. ANS: E   PTS: 1   MSC: tgia04.04.03.31m
50. ANS: E   PTS: 1   MSC: tgia04.04.03.65m
51. ANS: D   PTS: 1   MSC: tgia04.04.03.81m
52. ANS: C   PTS: 1   MSC: tgia04.04.03.88m
53. ANS: E   PTS: 1   MSC: tgia04.04.04.30m
54. ANS: C   PTS: 1   MSC: tgia04.04.04.36m
55. ANS: E   PTS: 1   MSC: tgia04.05.01.44m
56. ANS: A   PTS: 1   MSC: tgia04.05.01.90m
57. ANS: A   PTS: 1   MSC: tgia04.05.03.14m
58. ANS: C   PTS: 1   MSC: tgia04.05.03.50m
59. ANS: C   PTS: 1   MSC: tgia04.05.03.67m
60. ANS: E   PTS: 1   MSC: tgia04.05.03.73m
61. ANS: C   PTS: 1   MSC: tgia04.05.05.29m
62. ANS: D   PTS: 1   MSC: tgia04.05.05.67m
63. ANS: E   PTS: 1   MSC: tgia04.05.05.89m
64. ANS: A   PTS: 1   MSC: tgia04.05.05.97m
65. ANS: A   PTS: 1   MSC: tgia04.05.07.49m
66. ANS: E   PTS: 1   MSC: tgia04.05.07.84m
67. ANS: D   PTS: 1   MSC: tgia04.05.07.99m
68. ANS: B   PTS: 1   MSC: tgia04.05.09.12m
69. ANS: C   PTS: 1   MSC: tgia04.05.09.31m
70. ANS: E   PTS: 1   MSC: tgia04.05.09.41m
71. ANS: E   PTS: 1   MSC: tgia04.05.09.45m

NUMERIC RESPONSE

72. ANS: 3   PTS: 1   MSC: tgia04.02.05.78
73. ANS: 64   PTS: 1   MSC: tgia04.05.01.74
74. ANS: -6   PTS: 1   MSC: tgia04.05.01.96
MATCHING

75. ANS: B   PTS: 1   MSC: tgia04.02.05.19
76. ANS: A   PTS: 1   MSC: tgia04.02.05.19
77. ANS: C   PTS: 1   MSC: tgia04.02.05.19
78. ANS: D   PTS: 1   MSC: tgia04.02.05.19

SHORT ANSWER

79. ANS: 
   −2; 0; 0; 4   PTS: 1   MSC: tgia04.02.02.11a
80. ANS: 
   \( y = \frac{1}{4}x + 8 \)   PTS: 1   MSC: tgia04.02.04.65
81. ANS: 
   no; (4,3), (4,5), (4,9)   PTS: 1   MSC: tgia04.02.05.23
82. ANS: 
   yes; none   PTS: 1   MSC: tgia04.02.05.24
83. ANS: 
   42; 76   PTS: 1   MSC: tgia04.02.05.59
84. ANS: 
   11; down   PTS: 1   MSC: tgia04.02.06.13b
85. ANS: 
   5; right   PTS: 1   MSC: tgia04.02.06.14b
86. ANS: 
   (20, −18)   PTS: 1   MSC: tgia04.03.02.49
87. ANS: 
   48; 16   PTS: 1   MSC: tgia04.03.03.51
88. ANS: 
(2, 4, 4)

PTS: 1 MSC: tgia04.03.04.57

89. ANS: 
2; 1; 7

PTS: 1 MSC: tgia04.03.05.21

90. ANS: 
(−2, −4, 8)

PTS: 1 MSC: tgia04.03.07.54

91. ANS: 
$4r^{13}$

PTS: 1 MSC: tgia04.05.01.101

92. ANS: 
$\frac{8z^{24}}{27a^{9}b^{21}}$

PTS: 1 MSC: tgia04.05.01.105

93. ANS: 
$\frac{1}{16x^3}$

PTS: 1 MSC: tgia04.05.01.109

94. ANS: 
4.277; 20; 427,700,000,000,000,000,000

PTS: 1 MSC: tgia04.05.02.65

95. ANS: 
$3x^3 - 8x^2 + 14x - 18$

PTS: 1 MSC: tgia04.05.03.69

96. ANS: 
$6y^3 + 13y^2 + 12y + 4$

PTS: 1 MSC: tgia04.05.04.35

97. ANS: 
$-96y^3z + 40y^2z^2 - 4yz^3$

PTS: 1 MSC: tgia04.05.04.46

98. ANS: 
$(m + n)(m + n + p)$

PTS: 1 MSC: tgia04.05.05.106
99. ANS:
   \((8a - 3)(a + 5)\)
   PTS: 1   MSC: tgia04.05.06.49

100. ANS:
   \((2x + y)(2x - 5y)\)
   PTS: 1   MSC: tgia04.05.06.59

101. ANS:
   \((8r - 5s)(r + 2s)\)
   PTS: 1   MSC: tgia04.05.06.60

102. ANS:
   \(-3(p - q)(p + 4q)\)
   PTS: 1   MSC: tgia04.05.06.61

103. ANS:
   \(-(x + 6)(x - 3)\)
   PTS: 1   MSC: tgia04.05.06.82

104. ANS:
   \((5x - 1)^2\)
   PTS: 1   MSC: tgia04.05.06.85

105. ANS:
   \(6yz(3x - 2)(x + 4)\)
   PTS: 1   MSC: tgia04.05.06.88

106. ANS:
   \(x^2(5x^2 - 6)(3x^2 + 2)\)
   PTS: 1   MSC: tgia04.05.06.70

107. ANS:
   \((5g^3 - 6)(g^3 + 6)\)
   PTS: 1   MSC: tgia04.05.06.100

108. ANS:
   \((q - r)(3n + 2)(5n - 9)\)
   PTS: 1   MSC: tgia04.05.06.102

109. ANS:
   \((2a - 4b)(2a + 4b)(4a^2 + 16b^2)\)
   PTS: 1   MSC: tgia04.05.07.32
110. ANS: 
\[(a + b - c)(a + b + c)\]

PTS: 1 MSC: tgia04.05.07.33

111. ANS: 
\[3x(x - 3)(x + 3)\]

PTS: 1 MSC: tgia04.05.07.40

112. ANS: 
\[(2p + q)(4p^2 - 2pq + q^2)\]

PTS: 1 MSC: tgia04.05.07.55

113. ANS: 
\[3(n - 5)(n^2 + 5n + 25)\]

PTS: 1 MSC: tgia04.05.07.70

114. ANS: 
prime

PTS: 1 MSC: tgia04.05.07.84

115. ANS: 
\[y(3xy - 2)(9x^2y^2 + 6xy + 4)\]

PTS: 1 MSC: tgia04.05.08.14

116. ANS: 
\[-2xy(x + 3y - 5)\]

PTS: 1 MSC: tgia04.05.08.15

117. ANS: 
\[\langle x - 2t \rangle \cdot \langle y + s^2 \rangle\]

PTS: 1 MSC: tgia04.05.08.16

118. ANS: 
\[y^3 (4x + 1)(4x + 1)\]

PTS: 1 MSC: tgia04.05.08.25