Exercise 1.7

1. Give either the number of the quadrant in which each of the following points lies or the name of the axes on which the point lies.
   a) \((-1, \frac{5}{6})\)  
   b) \((-2, 0)\)  
   c) \((3, -\frac{2}{3})\)  
   d) \((-26, -26)\)  
   e) \((0, -\frac{6}{7})\)

3. Which of the following are solutions of \(3x - 5y = 8\)?
   (1, -1);  (-1, 1);  (-4, 4);  (4, -4);  (-4, -4);  \(\left(0, \frac{8}{5}\right)\);  \(\left(\frac{8}{3}, 0\right)\);  \(\left(\frac{2}{3}, \frac{6}{5}\right)\);  \(\left(\frac{4}{3}, -\frac{4}{5}\right)\)

5. Match each statement in the right-hand column with the correct graph or equation in the left-hand column.

   a)  
   i) A vertical line two units to the right of the y-axis.
   ii) A vertical line two units to the left of the y-axis.
   iii) A horizontal line two units above the x-axis.
   c) \(x = +2\)
   d) \(y = -2\)
   iv) A horizontal line two units below the x-axis.

For each of the following equations in two variables,
   a) solve for \(y\) in terms of \(x\);  
   b) complete the ordered pairs or the table of values.
7.  $3x - 8y = 1$:  $(0, ?),  (-2, ?),  (1, ?),  (4, ?)$.

9.  $\frac{x}{2} + \frac{5y}{3} = \frac{7}{6}$

$$\begin{array}{c|cccc}
\text{y} & 0 & -\frac{3}{4} & 7 \\
\hline
\text{x} & 0 & -1 & \frac{3}{4} & 7 \\
\end{array}$$

Find intercepts for the graphs of each of the following.

11.  $y = \frac{6x}{x - 2}$

13.  $y = 10x^2 - 43x + 12$

15.  $3x^2 - 2y^2 = 24$

17.  $y = \frac{\sqrt{2}}{x + 1}$

19.  $y = \frac{x^2 - 2x - 4}{x^3 + 1}$

21.  $5y^2 + x^2 = 125$

Check the following for all three types of symmetry.

23.  $y = \frac{2x}{3x^2 + 4}$

25.  $xy^2 = 4$

27.  $y = 2x^3 - 3x^2$

29.  $y = \frac{x^2}{x^4 + 1}$

Sketch the graph of each of the following equations. For each, find intercepts, check for symmetry, and make a table of values. On each graph label at least three points.

31.  $2x - 3y = 5$

33.  $y = \frac{1}{x^3}$

35.  $3x + 5y = 15$

37.  $x = y^2 + y$

45.  $y = \frac{1}{1 + x^2}$

Evaluate the following.

47.  a) $\begin{bmatrix} 3 & 1 \\ \frac{1}{3} \end{bmatrix}$  b) $[-3]$  c) $\begin{bmatrix} \frac{3}{4} \end{bmatrix}$

49.  a) Complete the following table of values:
b) Use the results from part a) together with any additional points you choose to find in order to sketch the graph of \( y = [x] \).

For each of the following use the given equation and a calculator (round to tenths) to complete the table of values. Then sketch each graph. If necessary, include more points in the table of values.

51. \( y = \sqrt{x} \);

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<th>x</th>
<th>0</th>
<th>0.2</th>
<th>0.5</th>
<th>0.9</th>
<th>1.5</th>
<th>2</th>
<th>3</th>
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</thead>
<tbody>
<tr>
<td>y</td>
<td>0</td>
<td>0.2</td>
<td>0.5</td>
<td>0.9</td>
<td>1.5</td>
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53. \( y = x^{2/3} \);

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<thead>
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<th>x</th>
<th>0</th>
<th>0.2</th>
<th>0.5</th>
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55. Given \( y = \frac{2.3x}{4.5x + 1.7} \). Use a calculator to find \( y \) if:
   a) \( x = 3.12 \)
   b) \( x = -2.8 \)

Use the quadratic formula and then a calculator to find two-decimal place approximations to the following quadratic equations.

57. \( 16x^2 - 11x - 2 = 0 \) 59. \( 4x^2 + 23x - 1 = 0 \)

For problems 61 - 65, do the following:
   a) Use a graphing calculator to graph the indicated equation.
   b) With pencil and paper, copy the graph found on the screen of the graphing calculator.
   c) Compare this result with the graph sketched previously.

61. problem 45  
63. problem 51  
65. problem 53