

WORKSHEET # 7

LESSON # 6 Coordinate Planes / Graphing

Unit # 1

Row # _____

Name _____

Period _____

In Exercises 2 and 3, draw a rectangular coordinate system and sketch the set of points whose coordinates (x, y) satisfy the given conditions.

2. (a) $x = 0$ (b) $y = 0$
 (c) $y < 0$ (d) $x \geq 1$ and $y \leq 2$
 (e) $x = 3$ (f) $|x| = 5$.
3. (a) $x = 2$ (b) $y = -3$
 (c) $x \geq 0$ (d) $y = x$
 (e) $y \geq x$ (f) $|x| \geq 1$.

In Exercises 4 and 5, the points lie on a horizontal or vertical line. Determine whether the line is horizontal or vertical.

4. (a) $A(9, 2), B(7, 2)$
 (b) $A(2, -6), B(3, -6)$
 (c) $A(6, 6), B(6, 1)$.
5. (a) $A(-4, \sqrt{2}), B(-4, -3)$
 (b) $A(0, -4), B(3, -4)$
 (c) $A(0, 0), B(0, -5)$.
6. Find the fourth vertex of the rectangle, three of whose vertices are $(-1, 4), (6, 4),$ and $(-1, 9)$.
7. In each part determine if the given ordered pair (x, y) is a solution of $x^2 - 2x + y = 4$.
 (a) $(0, 4)$ (b) $(-3, 7)$
 (c) $(\frac{1}{2}, \frac{19}{4})$ (d) $(1 + \sqrt{5-t}, t)$.
8. Figure 1.3.22 shows only a portion of the graph of an equation in the variables x and y for $x \geq 0$ and $y \geq 0$. Sketch the complete graph if it is known to be
 (a) symmetric about the x -axis
 (b) symmetric about the y -axis
 (c) symmetric about the origin.

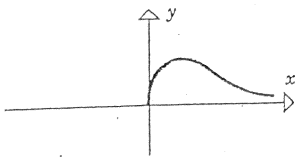
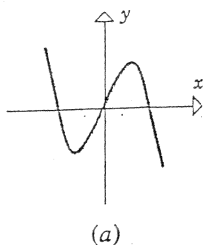
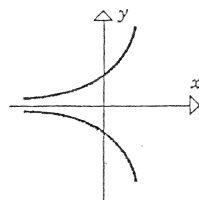


Figure 1.3.22

9. In parts (a)–(d) of Figure 1.3.23, the graphs of equations in the variables x and y are shown. In each case determine whether the graph is symmetric about the x -axis, y -axis, origin, or none of the preceding.



(a)



(b)

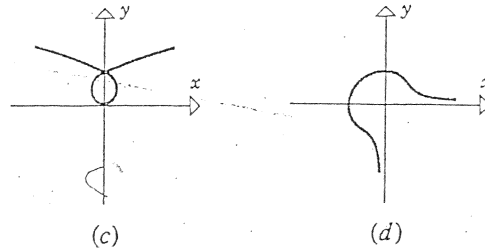


Figure 1.3.23

10. Use Theorem 1.3.2 to show that a graph which is symmetric about the x -axis and y -axis must be symmetric about the origin. Give an example to show that the converse is not true.
11. Which of the curves shown in Figure 1.3.21 have symmetry about
 (a) the x -axis
 (b) the y -axis
 (c) the origin?

In Exercises 12 and 13, determine whether the graph is symmetric about the x -axis, the y -axis, or the origin.

12. (a) $x = 5y^2 + 9$
 (b) $x^2 - 2y^2 = 3$
 (c) $xy = 5$.
13. (a) $x^4 = 2y^3 + y$
 (b) $y = \frac{x}{3 + x^2}$
 (c) $y^2 = |x| - 5$.

In Exercises 14–23, sketch the graph of the equation. (A calculator will be helpful in some of these problems.)

14. $y = 2x - 3$.
15. $y = 6 - x$.
16. $y = 1 + x^2$.
17. $y = 4 - x^2$.
18. $y = -\sqrt{x + 1}$.
19. $y = \sqrt{x - 4}$.
20. $y = |x|$.
21. $y = |x - 3|$.
22. $xy = -1$.
23. $x^2y = 2$.

In Exercises 24 and 25, sketch the portion of the graph in the first quadrant, and use symmetry to complete the rest of the graph. (A hand calculator will be helpful.)

24. $9x^2 + 4y^2 = 36$.
25. $4x^2 + 16y^2 = 16$.
26. Sketch the graph of $y^2 = 3x$ and explain how this graph is related to the graphs of $y = \sqrt{3x}$ and $y = -\sqrt{3x}$.
27. Sketch the graph of $(x - y)(x + y) = 0$ and explain how it is related to the graphs of $x - y = 0$ and $x + y = 0$.
28. Graph $F = \frac{9}{5}C + 32$ in a CF -coordinate system.
29. Graph $u = 3v^2$ in a uv -coordinate system.
30. Graph $Y = 4X + 5$ in a YX -coordinate system.