1. Find the distance between \((\frac{-2}{5}, 7)\) and \((\frac{8}{5}, -3)\). Be sure to simplify your answer.

2. If \(M = \left(\frac{5}{4}, 4\right)\) is the midpoint of the line segment connecting \(A\) and \(B\) where \(B = (7, -5)\), find the coordinates of \(A\).

3. Sketch the graph of the set given by \(\{(x, y) \mid x > 2 \text{ and } -3 \leq y < 5\}\).

4. Determine the slope and \(y\)-intercept for \(8x - 3y + 5 = 0\). Label answers.

5. Find the \(x\)-intercept(s) and \(y\)-intercept(s) for \(16x^2 - 2y = 5\). Write answers as ordered pairs.

6. Sketch the graph of the line with slope \(m = \frac{-2}{5}\) and passes through the point \((-1, 3)\).

7. Calculate the slope of the given line.

8. Find the equation of the line given in #7.

9. Find the equation of the circle that has endpoints of the diameter at \((4, -9)\) and \((12, 11)\).

10. Show that \(x^2 + y^2 + 22x - 14y + 52 = 0\) represents a circle and find its center and radius.

11. Find the equation of the line that passes through \(\left(-\frac{4}{11}, \frac{8}{3}\right)\) that is perpendicular to the \(y\)-axis.

12. Find the equation of the line passing through \(\left(-\frac{3}{2}, 4\right)\) that is parallel to \(2x - 6y = 3\).

13. Find the equation of the line passing through \((-7, 2)\) and \((-3, 5)\).

14. Find the equation of the line passing through \((-2, 3)\) that is perpendicular to the line passing through \((-1, 5)\) and \((3, 7)\).

15. Determine whether the triangle with vertices \(A = (5, 3)\), \(B = (2, -5)\) and \(C(-6, -2)\) forms a right triangle. Show all work. State why or why not. Be specific.
ANSWERS

1. $2\sqrt{26}$

2. $A = \left( -\frac{9}{2}, 13 \right)$

3. see instructor

4. $m = \frac{8}{3}$, y-int$= (0, \frac{5}{3})$

5. $\left( \pm \frac{\sqrt{5}}{4}, 0 \right), \left( 0, -\frac{5}{2} \right)$

6. see instructor

7. $m = -\frac{3}{4}$

8. $y = -\frac{3}{4}x + \frac{1}{4}$

9. $(x - 8)^2 + (y - 1)^2 = 116$

10. $(x + 11)^2 + (y - 7)^2 = 118$; center$= (-11, 7)$, $r = \sqrt{118}$

11. $y = \frac{8}{3}$

12. $y = \frac{1}{3}x + \frac{9}{2}$

13. $y = \frac{3}{4}x + \frac{29}{4}$

14. $y = -2x - 1$

15. Prove by either showing slopes are negative reciprocals OR that the length of sides satisfy Pythagorean Theorem