# Algebra 3 Assignment # 4 — Review Worksheet

**(1)** Sketch a graph of each of the following

**(a)** $y = -3x + 4$ **(b)** $4x - 3y = 12$

**(2)** Write the equation of the line which satisfies each of the following.

**(a)** Passes through (3 , 5) with slope –2

**(b)** Passes through (–7 , –4) with slope $\frac{3}{5}$

**(c)** Passes through (4 , –1) and (0 , 0)

**(d)** Passes through (3 , 5) and (–2 , 5)

**(e)** Passes through (3 , –6), and is parallel to the line $4x - 2y = 11$

**(f)** Passes through (1 , 9), and is perpendicular to the line $5x + 3y = 2$

**(3)** Find the distance between each of the following pairs of points. Find the midpoint of each segment.

**(a)** (5 , 8) and (1 , 2) **(b)** (–3 , 9) and (7 , –1)

**(c)** (8 , 6) and (3 , –6) **(d)** $\left(\frac{1}{2} , \frac{3}{4}\right)$ and $\left(\frac{5}{2} , -\frac{5}{4}\right)$

**(4)** Triangle ΔABC has vertices A(–2 , 9) , B(4 , 1) , C(2 , –3).

**(a)** Find the perimeter of ΔABC.

**(b)** Write the equation of the longest side of ΔABC

**(c)** Find the length of the median to the shortest side of ΔABC.

**(d)** Write the equation of the perpendicular bisector of $\overline{AC}$.

**(e)** Write the equation of the altitude to $\overleftrightarrow{BC}$.

**(f)** Find the centroid of ΔABC.

# Algebra 3 Assignment # 4 – Review Worksheet

**(5)** Write the equation of the circle with center (2 , –5) and radius 4.

**(6)** Write the equation of the circle if the endpoints of a diameter are the points (5 , –2) and (–3 , 6).

**(7)** Write the equation of the circle whose center is (4 , 6) , if the graph is tangent to the y-axis.

**(8)** Write the equation of the line which is tangent to the graph of the circle $x^2 + y^2 = 20$ at the point (4 , 2).

**(9)** Sketch a graph of each of the following.

**(a)** $x^2 + y^2 + 2x - 4y - 4 = 0$

**(b)** $x^2 + y^2 - 6x + 4y - 3 = 0$

**(c)** $x^2 + y^2 - 4x + 4 = 0$

**(d)** $x^2 + y^2 + 8y + 7 = 0$

**(10)** Triangle ΔABC has vertices A(–2 , 2) , B(6 , 8) , C(4 , –1). Find the equation of the circle which is circumscribed about ΔABC.

**(11)** Find the distance between the point ( 5 , –1 ) and the line $y = 2x + 3$.

# Algebra 3 Assignment # 4 – Review Worksheet

**Answers**

**(2)** **(a)** $y = -2x + 11$

**(b)** $y = \frac{3}{5}x + \frac{1}{5}$

**(c)** $y = -\frac{1}{4}x$

**(d)** $y = 5$

**(e)** $y = 2x - 12$

**(f)** $y = \frac{3}{5}x + \frac{42}{5}$

**(3)** **(a)** distance = $2\sqrt{13}$, midpoint $(3 , 5)$

**(b)** distance = $10\sqrt{2}$, midpoint $(2 , 4)$

**(c)** distance = $13$, midpoint $\left( \frac{11}{2} , 0 \right)$

**(d)** distance = $2\sqrt{2}$, midpoint $\left( \frac{3}{2} , -\frac{1}{4} \right)$

**(4)** **(a)** perimeter = $10 + 2\sqrt{5} + 4\sqrt{10}$

**(b)** $y = -3x + 3$

**(c)** $5\sqrt{5}$

**(d)** $y = \frac{1}{3}x + 3$

**(e)** $y = -\frac{1}{2}x + 8$

**(f)** $\left( \frac{4}{3} , \frac{7}{3} \right)$

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**Answers**

**(5)** $(x-2)^2 + (y+5)^2 = 16$

**(6)** $(x-1)^2 + (y-2)^2 = 32$

**(7)** $(x-4)^2 + (y-6)^2 = 16$

**(8)** $y = -2x + 10$

**(9)** **(a)** $(x+1)^2 + (y-2)^2 = 9$

**(b)** $(x-3)^2 + (y+2)^2 = 16$

**(c)** $(x-2)^2 + (y-0)^2 = 0$

**(d)** $(x-0)^2 + (y+4)^2 = 9$

**(10)** $\left(x - \frac{11}{4}\right)^2 + (y - 4)^2 = \frac{425}{16}$

**(11)** $\frac{14}{5}\sqrt{5}$