First name: _____ Last name: _____ Student ID: _____

Analytic Geometry Homework

Basic problems

1. Find the slope and the y-intercept for each of the following equations.

1. $y - 5x + 11 = 0$	2. $y = -11x + \frac{1}{4}$

2. Find an equation for a line that satisfies the given slope m and contains the point.

1. m = -11; a point on the line: (1, -29)	2. m = -12; a point on the line: (-6, 90)

3. Find an equation for a line that satisfied the two points which are on the line.

1. (9, 136), (3, 40)	2. (1, 3), (6, -42)

Challenge problems

1. Find an equation for the perpendicular bisector of the line segment connecting the points (-2, 5) and (3, -7).

2. Given points $A = (-2, 5)$ and $B = (6, -1)$, find the point C from the list below so that A, B, and C are collinear.
(A) $C = (10, -4)$ (B) $C = (2, -2)$ (C) $C = (4, 3)$ (D) $C = (-6, 9)$ (E) $C = (0, 0)$

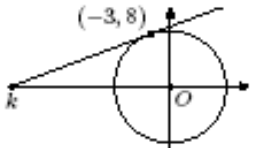
3. A line has x-intercept (5, 0) and is perpendicular to the line $2x + 8y = 10$. Find the y-intercept of the line.

4. Suppose that y is a linear function of x, and that y = 6 when x = 2 and y = 7 when x = 3. What is y when x = 7?

5. Find the distance from the point (3, 2) to the line $y = 3x + 2$.

6. What is the area of $\triangle ABC$ with the vertices A(1, 3), B(1, −5) and C(7, −8)?

7. In the figure shown, a line is tangent to the circle centered at the origin. The point of tangency is (−3, 8). The line intersects the x-axis at x = k. Find k.



8. A line l_1 has a slope of -4 and passes through the point (r, 2). A second line l_2, is perpendicular to l_1, intersects at the point (a, b), and passes through the point (8, r) . What is the value of a in terms of r*?*

9. Find the possible values of k so that two lines $kx+ y = 3$ and $x- y = 2$ intersect in the first quadrant.

10. Let A be the point (3, 2), and B be the reflection of A about the x-axis. Let C be the reflection point of B about the line $y = -x$ and D be the reflection point of C about the origin. What is the area of the quadrilateral $ABCD$?

11. If the graphs of $2y + x + 3 = 0$ and $3y + ax + 2 = 0$ are to meet at right angle, then what is a?