Problem 1. Let A = (-1, 3) and B = (7, 7).

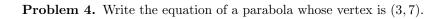
- (a) Find the slope of the line \overrightarrow{AB} .
- (b) Find the point-slope equation of the line \overrightarrow{AB} .
- (c) Find the slope-intercept equation of the line \overrightarrow{AB} .

Problem 2. Let A = (-1, 3) and B = (7, 7).

- (a) Find the midpoint M of \overline{AB} .
- (b) Find the distance AM.
- (c) Find the equation of the circle with diameter \overline{AB} .

Problem 3. Let A = (-1,3) and B = (7,7). Let C = (11,5).

- (a) Find the point-slope equation of the line parallel to \overleftrightarrow{AB} and through the point C.
- (b) Find the point-slope equation of the line perpendicular to \overleftrightarrow{AB} and through the point C.



Problem 5. Find the center and radius of a circle which is the locus of the equation

$$x^2 - 6x + y^2 + 14y = 11.$$

Problem 6. Find the vertex of a parabola which is the locus of the equation

$$y = x^2 - 6x - 7.$$

Problem 7. The line of slope 2 through the origin and the circle of radius 1 centered at the origin intersect in two points. Find these points.