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

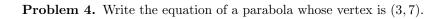
- (a) Find the slope of the line  $\overrightarrow{AB}$ .
- (b) Find the point-slope equation of the line  $\overrightarrow{AB}$ .
- (c) Find the slope-intercept equation of the line  $\overrightarrow{AB}$ .

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

- (a) Find the midpoint of  $\overline{AB}$ .
- (b) Find the distance AB.
- (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  $\overrightarrow{AB}$  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.