ALGEBRA II | Activity 0915 | Name:
DR. PAUL L. BAILEY | Thursday, September 1, 2022

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

(a) Find the slope of the line $\overleftrightarrow{AB}$.

(b) Find the point-slope equation of the line $\overleftrightarrow{AB}$.

(c) Find the slope-intercept equation of the line $\overleftrightarrow{AB}$.

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 4. Write the equation of a parabola whose vertex is $(3, 7)$.

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.