Precalculus
Homework Lecture 8

1. Show that the graph of the equation is a circle. Find the center of the circle and its radius. Plot the circle by hand (roughly). The answer key has not been proofread, use with great caution.

   (a) $3x - x^2 = y^2 - 1$.

   (b) $x^2 + y^2 - x - 2y = 0$

   (c) $\frac{1}{2}\left((x - y)^2 + (x + y)^2\right) - 1 = 0$

   (d) $2x^2 + y^2 = 2 - y^2$

   (e) $2x^2 + 2y^2 - x + 2y = 3$

2. Write the equation of the circle with the indicated center and passing through the indicated point.

   (a) Center: $(1, 2)$, passing through: $(0, 0)$.

   (b) Center: $(-1, -2)$, passing through: $(1, 1)$.

   (c) Center: $(3, 5)$, passing through: $(5, 7)$.

3. Find the x and y intercepts (if any) of the indicated circle.

   (a) Circle with center $(1, 2)$ and radius 3.

   (b) Circle with center $(-1, 2)$ and radius 2.

   (c) Circle with center $(1, -3)$ and passing through $(0, 1)$.

   (d) Circle with center $(2, 3)$ and passing through $(0, 0)$.