

# Advanced Math

## 1-1 (Day 2)

### Equations of Circles

Equation of a Circle: *simplified*:  $x^2 + y^2 = r^2$  (center is origin)  
 These are referred to as standard form in the book instructions.  
*general*:  $(x-h)^2 + (y-k)^2 = r^2$   
 (h,k): center      r = radius

Find the standard form of the equation of the specified circle.

69) Center: (0,0); radius: 3

$$x^2 + y^2 = 9 \quad \begin{matrix} r=3 \\ r^2=9 \end{matrix}$$

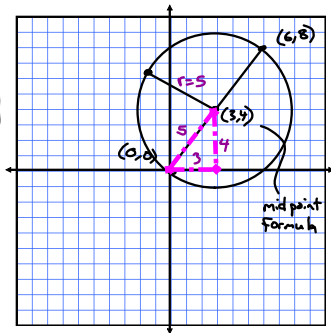
Find the standard form of the equation of the specified circle.

75) Endpoints of a diameter: (0,0) and (6,8)

center: (3,4)

radius: 5

$$(x-3)^2 + (y-4)^2 = 25$$

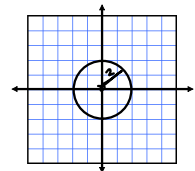


Find the center and radius of each, and sketch its graph.

79)  $x^2 + y^2 = 4$

center: (0,0)

r = 2



81)  $(x-1)^2 + (y+3)^2 = 4$

center: (1,-3)

radius: 2

*Graph on Calc*

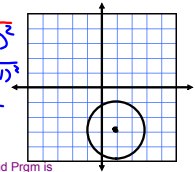
$$\sqrt{(y+3)^2} = \sqrt{4-(x-1)^2}$$

$$|y+3| = \pm \sqrt{4-(x-1)^2}$$

$$-3 \pm \sqrt{4-(x-1)^2}$$

For a better circle, try Zoom: Square.

Even better, clear Y1 and Y2, go to main screen, 2nd Prgm is Draw. Choose Circle. Add (h, k, r) where h and k are the center and r is the radius, press enter, and it will draw a circle.



91) A manufacturing plant purchases a new molding machine for \$225,000. The depreciated value  $y$  after  $t$  years is given by:

$$y = 225,000 - 20,000t \quad \text{where } 0 \leq t \leq 8$$

Sketch a graph of the equation. List the window size that will show the graph on the calculator screen.

NORMAL FLOAT AUTO  $\alpha \Rightarrow \Delta$  RCL ON MP

WINDOW

Xmin=0      *type these.*

Xmax=8

Xscl=1

Ymin=65000

Ymax=225000

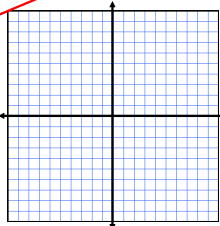
Yscl=1

Xres=1

$\Delta$ X=.0303030303030303

TraceStep=.0606060606060606

Use Zoom: Fit to find the Ymin and Ymax.



Assignment:

Pg. 116

70-84 even,

85, 86, 92

97, 98

Note: 4 graphs