Sec 13.6
pgs. 635 - 636
#3 - 7 odd, 8, 9, 13, 14

#3 Find the center, the radius, the diameter, the circumference, and area of the circle

a. $x^2 + y^2 = 36$

Center: $(0,0)$
Radius: 6
Diam: 12
$C = 2\pi(6) = 12\pi$
$A = 36\pi$

b. $(x-3)^2 + (y+6)^2 = 100$

Center: $(3,-6)$
Radius: 10
Diam. 20
$C = 2\pi(10) = 20\pi$
$A = 100\pi$

c. $(x+5)^2 + y^2 = \frac{9}{4}$

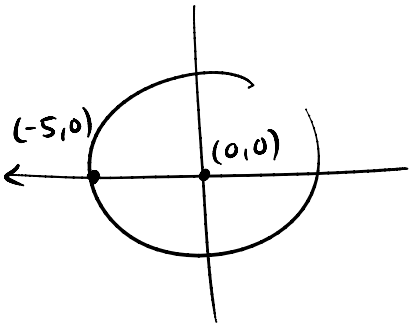
Center: $(-5,0)$
Radius: $3/2$
Diameter: 3
$C = 2\pi\left(\frac{3}{2}\right) = 3\pi$
$A = 9/4\,\pi$

d. $\frac{(x+5)^2}{3} + \frac{(y-2)^2}{3} = 27$ (3· 3· 3·)

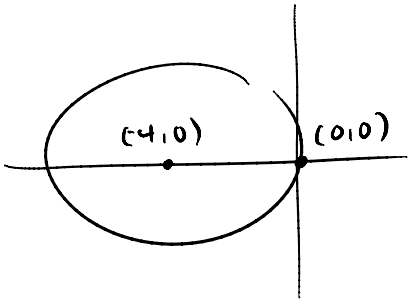
$(x+5)^2 + (y-2)^2 = 81$

Center: $(-5,2)$
radius: 9
diameter
$C = 8\pi$
$A = 81\pi$

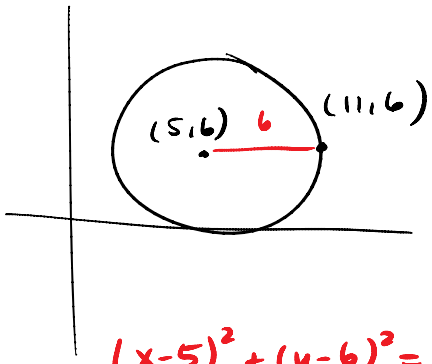
#4 Write equation of circle



$x^2 + y^2 = 25$



$(x+4)^2 + y^2 = 16$



$(x-5)^2 + (y-6)^2 = 36$

#5 Consider the equation $(x-3)^2+(y+2)^2=17$

a. Is $(4,2)$ on the graph

$(4-3)^2+(2+2)^2=17$

$1^2+4^2=17$

$17=17$ yes

b. Is $(3,-2)$ on the graph

$(3-3)^2+(-2+2)^2=17$

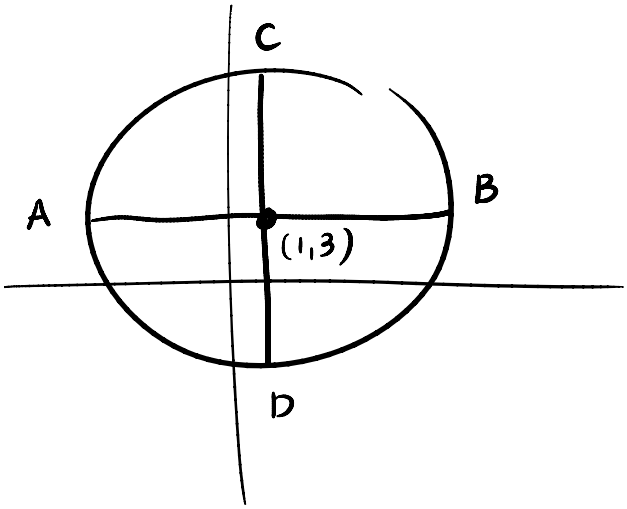
$0^2+0^2=17$

$0\neq 7$ NO

#6 a. $(x-3)^2+(y+1)^2=0$ Point Circle

b. $(x+5)^2+y^2=-100$ Imagnary Circle

#7



#8 Determine the equation of each circle

a. The center is the origin, and the circle passes through (0, -5) $x^2+y=25$

b. The endpoints of a diameter (-2,1) and (8,25) $(x-3)^2+(y-13)^2=169$

c. The center is (-1,7) and the circle passes through the origin $(x+1)^2+(y-7)^2=50$

d. The center is (2, -3) and the circle passes through (3,0). $(x-2)^2+(y+3)^2=10$

#9 Indicate whether the point is inside, on, or outside the circle.

a. $(2,5)$; $x^2+y^2=29$

$2^2+5^2=29$

$29=29$ ✓

ON

b. $(3,0)$ $x^2+y^2=100$

$(3)^2+(0)^2<100$

$9<100$

inside

c. Origin: $(x-2)^2+(y+5)^2=16$

$(-2)^2+(5)^2>16$

$4+25>16$

$29>16$ outside

d. $(-2,1)$ $x^2+(y+6)^2=23$

$(-2)^2+(1+6)^2=23$

$4+7^2=23$

$53=23$

outside

#13 Find the distance between the points of intersection of the graph of $x^2+y^2=17$ and $x+y=3$

$y=3-x$

$x^2+(3-x)^2=17$

$x^2+9-6x+x^2=17$

$2x^2-6x-8=0$

$2(x^2-3x-4)=0$

$2(x-4)(x+1)=0$

$x=4,-1$

points $(4,-1)$ $(-1,4)$

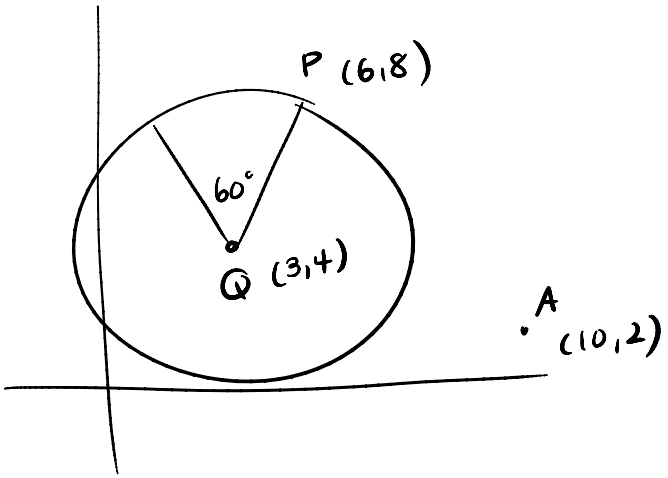
$d=\sqrt{(4+1)^2+(4+1)^2}$

$d=\sqrt{5^2+5^2}$

$d=\sqrt{50}$

$\boxed{d=5\sqrt{2}}$

#14



a. EQuation of tangent to circle at (6,8)

$m_{PQ} = \frac{8-4}{6-3} = \frac{4}{3}$

(6,8)
(3,4)

$\perp m = -\frac{3}{4}$ $\quad \boxed{y-8 = -\frac{3}{4}(x-6)}$

b. Circumference $\quad d = \sqrt{(8-4)^2+(6-3)^2}$

$d = \sqrt{4^2+3^2}$

$d = \sqrt{16+9}$

$d = \sqrt{25}$

$d = 5$

$\boxed{C = 10\pi}$

c. Dist $\overline{AQ}$

$\boxed{\sqrt{53}}$

d. Distance from A to circle

$\sqrt{53} - 5 \approx \boxed{2.3}$

e. Area of shaded sector

$\frac{1}{6} \cdot \pi(5)^2 \approx \boxed{13.1}$