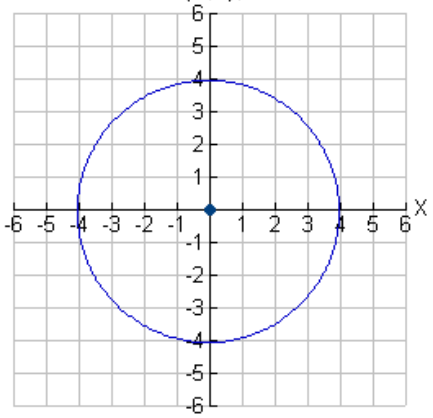
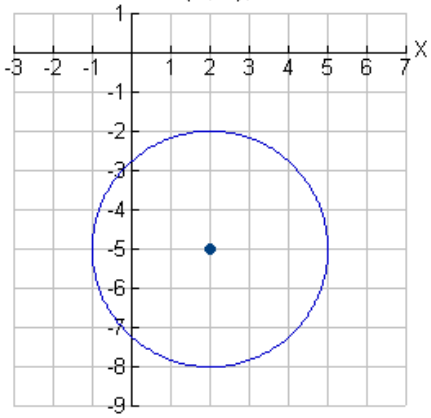
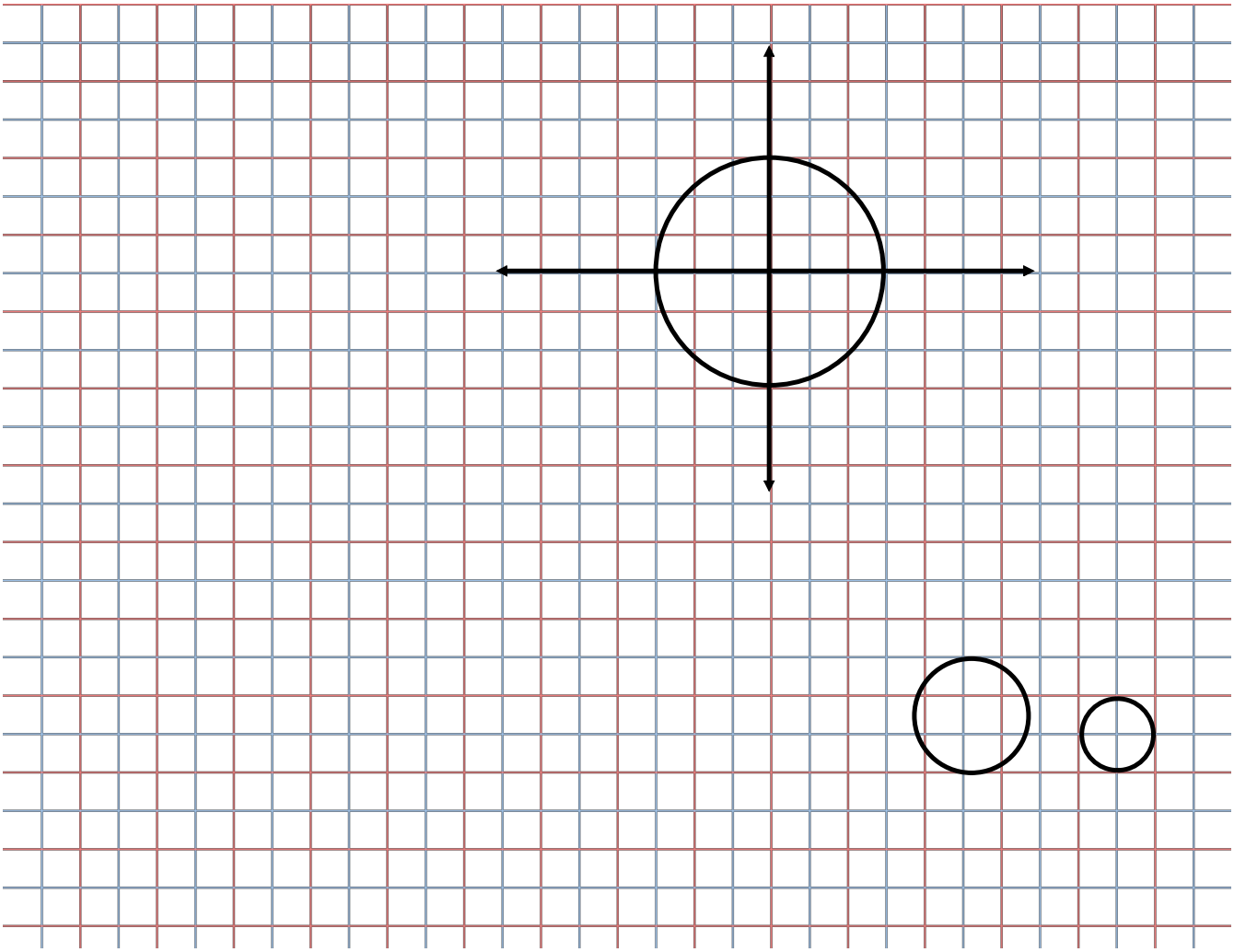
Equations of Circles

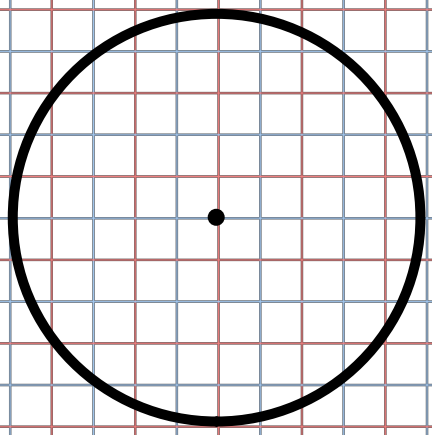
Definition: **A circle** is a locus (set) of points in a plane equidistant from a fixed point.

Circle whose center is at the origin	Circle whose center is at (*h*,*k*) (This will be referred to as the "center-radius form". It may also be referred to as "standard form".)
Equation: $x^2 + y^2 = r^2$ Example: Circle with center (0,0), radius 4 $x^2 + y^2 = 16$ Graph: Center at (0,0), radius 4 	Equation: $(x-h)^2 + (y-k)^2 = r^2$ Example: Circle with center (2,-5), radius 3 $(x-2)^2 + (y+5)^2 = 9$ Graph: Center at (2,-5), radius 3 



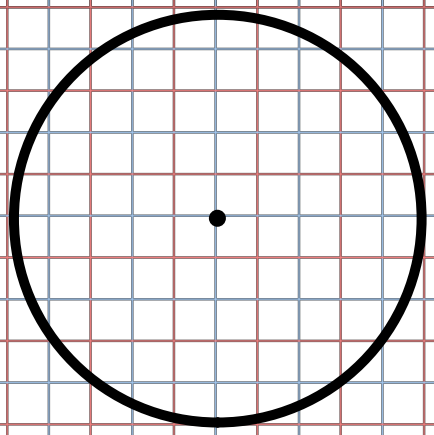
Given:

1. radius = 5
   center = (-1, 4)



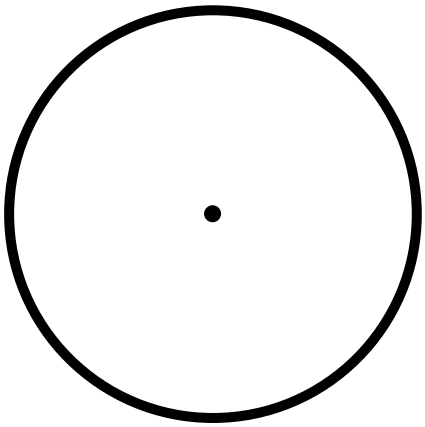
Given:

2. area = 64π
   center = (10, 6)



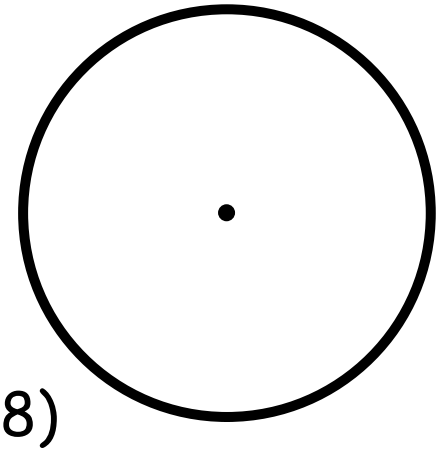
Given:

3. Circumference = 40π
   center = (-5, -7)

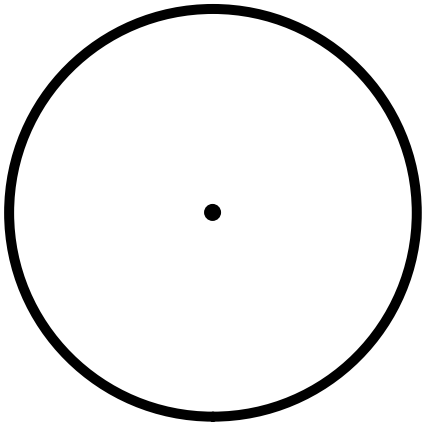


Given:

4. Center: (2, 5)
point on the circle (-6, 8)



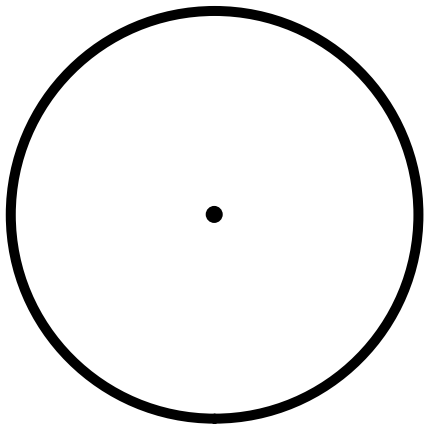
Given:



5. endpoints of the diameter (-7, 3) and (1, 5)

Given:

6. tangent to y = 4
   center = (-3, 0)



Given:

7. three points on the circle:
(-3, -10) (8, 7) and (5, 4)