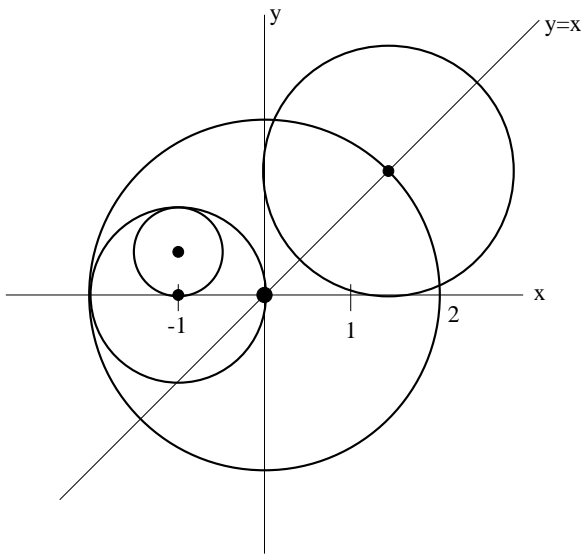


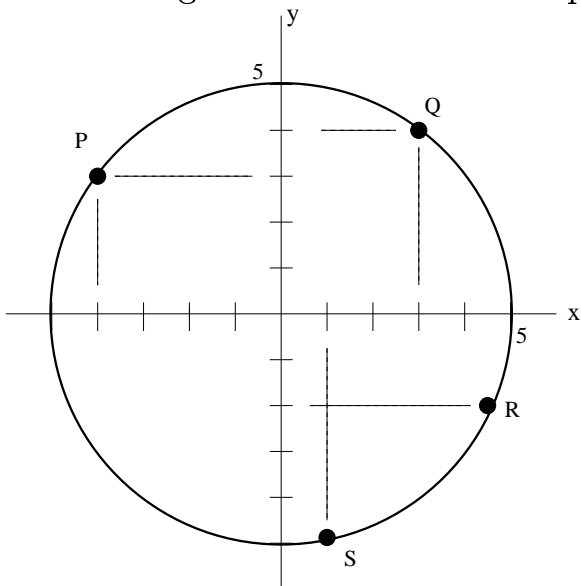
Worksheet #1
 Circles, Tangent lines and Applications
 Math 124

We review equations of circles, describe a method to find the equation of a tangent line through a given point on a circle, then look at applications.

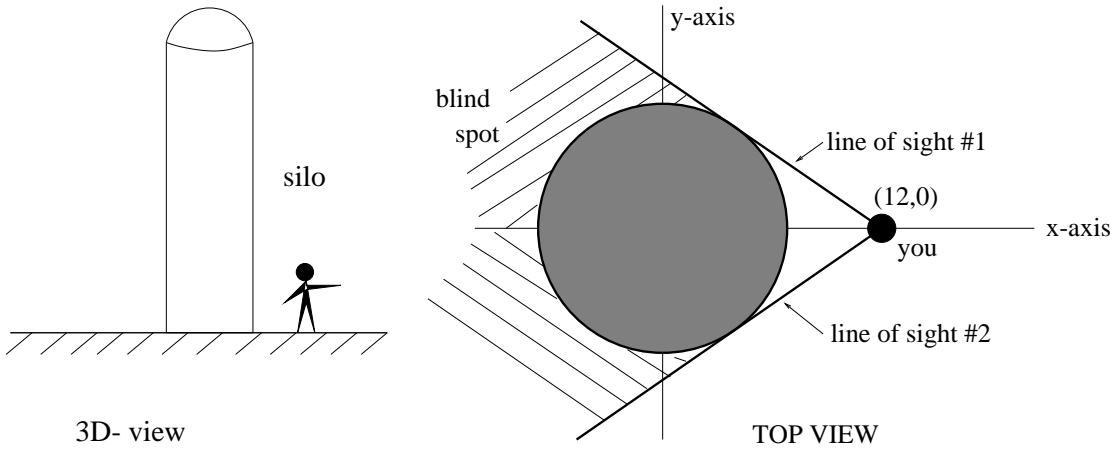
1. Find an equation for each of the four circles below; the center of each circle is indicated by a solid "dot":



2. The tangent line to a circle at a point will be perpendicular to a radial line connecting the circle center and the point. Find the equation of the tangent line to the circle pictured at the points P , Q , R , S .



3. You are standing next to a silo of cross-sectional radius 8 feet at the indicated position and your vision is partially obstructed. What portion of the y -axis can you see?



4. Sketch the circle of radius 2 centered at the point $(3, -3)$ and the line with equation $y = 2x + 2$. Find all points on the circle where the tangent line is perpendicular to the line $y = 2x + 2$.

