

Math 1010

March 2, 2018

Homework 19

Text problems: 5.2 # 1, 7, 9, 11, 17, 25, 46*, 48* 5.3 # 1, 7, 9, 47

1) What is the equation of the circle with radius 6 with center (2, -4) ?

2) Find the center and radius of this circle: $(x+3)^2 + y^2 = 20$

3) What is the equation of the circle with center (1, 1) which passes through the point (1, -7) ?

4) What is the equation of the circle with center (-2,3) which passes through the point (0, -1) ?

5) Find the center and radius of the circle $x^2 + y^2 - 2x + 8y + 1 = 0$

6) The standard equation for a parabola is $y = \frac{1}{4p} x^2$ where the vertex is at (0, 0) and the focus is at (0, p). What is the focus of the parabola $y = \frac{1}{24} x^2$?

7) Sketch the parabola $y = 2x^2$ showing and clearly labeling the vertex, the focus, directrix, and axis of symmetry.

8) Consider the parabola $y = kx^2$. If this parabola passes through (2, 3), find k.

9) A parabolic sound-collecting dish is to be made 24 inches wide at the opening and 12 inches deep. Consider the cross section of this dish in the xy plane with the vertex at the origin (0,0). What is the equation for this cross section? HINT: Consider this to be the parabola $y = \frac{1}{4p} x^2$, then identify a point on a top corner of the cross section matching the required dimensions of the dish, then use this point (x,y) to solve for p.