<u>**USEFUL DEFINITIONS FOR HW 26**</u>

1. Point at the origin $\Rightarrow$ $(0,0)$

2. Lines $\Rightarrow$ $y = mx + b$ where m is the slope and b is the y-intercept

3. Parabolas $\Rightarrow$ $y = a(x - h)^2 + k$ where (h, k) is the vertex of the parabola

4. Exponential Functions
   a. Increasing $\Rightarrow$ example $y = e^x$
   b. Decreasing $\Rightarrow$ example $y = e^{-x}$

5. Logarithmic Functions
   a. Increasing $\Rightarrow$ example $y = \ln x$
   b. Decreasing $\Rightarrow$ example $y = -\ln x$

6. Rational Functions are functions of the form: $y = \dfrac{p(x)}{q(x)}$
   a. x-axis symmetry
      $\Rightarrow$ $f(x) = -f(x)$
   b. y-axis symmetry
      $\Rightarrow$ $f(x) = f(-x)$
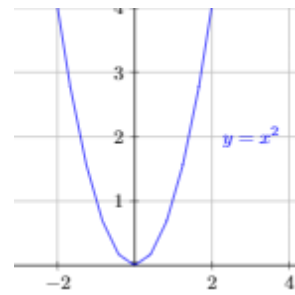
7. Circles $\Rightarrow$ $(x - h)^2 + (y - k)^2 = r^2$ where r is radius and (h, k) is the center

8. Ellipses $\Rightarrow$ $\dfrac{(x-h)^2}{a^2} + \dfrac{(y-k)^2}{b^2} = 1$ where (h, k) is the center

9. Hyperbolas $\Rightarrow$ $\dfrac{(x-h)^2}{a^2} - \dfrac{(y-k)^2}{b^2} = 1$ where (h, k) is the center

To find the foci for 8 and 9, we use the equation $c^2 = a^2 + b^2$, and solve for c.