

## Discussion Problems for Math 180

Thursday, October 16

- Express  $\frac{1}{2} \ln(y) - 2 \ln(x) + 1$  as a single logarithm.
  - Sketch a graph of  $\frac{1}{2} \ln(y) - 2 \ln(x) + 1 = 0$ .
- Consider taking a number to its own power: for instance,  $1^1 = 1$  and  $2^2 = 4$ , while

$$\left(\frac{1}{2}\right)^{1/2} = \frac{1}{\sqrt{2}} \approx 0.7071,$$

and so on. Which **positive** number, taken to its own power, gives the smallest result?

- Give an example of a function with domain  $(-\infty, \infty)$  that has no local minima or maxima.
- Write down the equation for a circle of radius  $r$  centered at  $(h, k)$ .
  - A circle passes through the point  $(7, 0)$  and is tangent to the line  $3x + 4y = 31$  at the point  $(5, 4)$ . What are the center and radius of this circle?
- Give an example of a polynomial function which has a local max at  $(0, 1)$  and a local min at  $(2, 0)$ .