

# Discussion Problems for Math 180

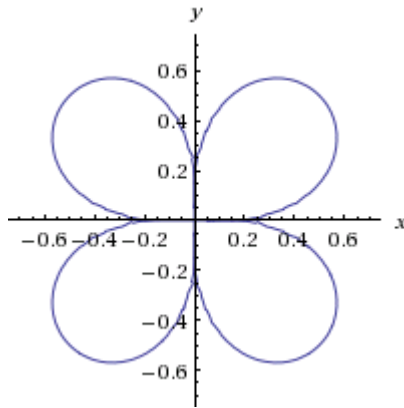
Thursday, February 19, 2015

## Review

1. If  $f(x) = 3x - 1$ , what is  $f^{-1}(x)$ ?
2. If  $f(x) = e^x$ , what is  $f^{-1}(x)$ ?
3. If  $g(x) = 2x$  and  $(f \circ g)(x) = 2 \sin(x) \cos(x)$ , what could  $f(x)$  be?

## This time

4. What is the derivative of  $e^{e^x}$ ?
5. Consider the circle  $(x - 1)^2 + (y + 3)^2 = 16$ . Write an equation for the tangent line to this circle at the point  $(3, 2\sqrt{3} - 3)$ .
6. Determine the derivative of  $\ln(x)$  using implicit differentiation and the derivative of  $e^x$ .
7. Consider the curve given by  $(x^2 + y^2)^4 = x^2 y^2$ :



Write an equation for the tangent line to this curve at the point  $\left(\frac{1}{2}, \frac{-1}{2}\right)$ .