

In class work 3

1. Find the equation for the line tangent to the ellipse  $x^2 + xy + y^2 = 3$  at  $(1,1)$
  
2. Given that  $\frac{d}{dx}[\sin^{-1}(x)] = \frac{1}{\sqrt{1-x^2}}$ , use the chain rule to find  $\frac{d}{dx}[\sin^{-1}(e^x)]$
  
3. Find  $\frac{d}{dx}[\sin^{-1}(\cos(x))]$
  
4. Let  $f(x) = 2x + \cos(x)$ 
  - a) Find  $f(0)$
  - b) Find  $f^{-1}(1)$
  - c) Use the fact that  $(f^{-1})'(x) = \frac{1}{f'(f^{-1}(x))}$  to find  $(f^{-1})'(1)$