Math 1000 – Dalhousie University – Summer 2010

Assignment 4 – Due Monday July 19th

1. Find $\frac{dy}{dx}$ if $y = x^2 + 2^x + \frac{\ln x}{3} - \arccos x + \pi^2 + \ln 2$.

2. Differentiate the following composite functions.
   (a) $y = (3x^2 - x)^9$
   (b) $y = e^{\cos x}$
   (c) $y = \ln(\sqrt{x})$
   (d) $y = e^{-5x} \tan 3x$
   (e) $y = \sqrt{\sin(2^x)}$

3. Find y' for the following functions.
   (a) $x^3 + y^3 = 1$
   (b) $\sqrt{xy} = 1 + x^2 y$
   (c) $y = x^x$
   (d) $y = (\sin x)^{1/x}$
   (e) $y = \dfrac{x^3 e^{2x} 4^x}{3^x (x^3 + 1)^5}$

4. Find the equation of the tangent line to the ellipse $x^2 + xy + y^2 = 3$, at the point $(1, 1)$.