Week 5 - Exercises
Oct. 13 & 15, 2015

Example 1.

Find $\dfrac{dy}{dx}$ given that

   a. $y = \pi^{e^2 x^3}$

   b. $y^e = 2^x$

   c. $y^x = x$

   d. $\cos(\pi y) = \sin(3x)$

   e.

$$\frac{y^{5a} x^2}{\sqrt{x^3 + 4}} = \frac{b^x \sin(x^4)}{e^x + y}$$

      a and b are constants

   f. $2^{x^2} \log_3(x^2 + 2x)^5 = y \sqrt[3]{x^5 + \sin(x)}$

Example 2.

Given $F(x) = \dfrac{2\sin\left(\frac{\pi}{2} F(G(x))\right)}{x}$, find an equation of the tangent line to $F(x)$ at $x = 2$. Assume

$F(1) = 3, \quad F(2) = 1, \quad F(3) = 2,$
$G(1) = 3, \quad G(2) = 2, \quad G(3) = 1,$
$G'(1) = 2, \quad G'(2) = 1, \quad G'(3) = 3.$