9/28/11

Hope the test went well. Should get it back at 1st tutorial meeting next week.

Sections 1, 2, 3, 6: Your Thursday tutorial this week is cancelled.

Sections 4, 5: Your Wednesday (today) tutorial is cancelled.
\[ (\pi) + \alpha = \pi \]

\[ \cos \left( \frac{\alpha}{2} \right) = \frac{\text{adjacent}}{\text{hypotenuse}} = \frac{1}{2} \]

Recall: \( \sec (\alpha) = \frac{1}{\cos (\alpha)} = \frac{\text{hypotenuse}}{\text{adjacent}} \]

\[ f(x) = \frac{\sec(x)f(x)}{\tan(x) + \sec(x)} \]

\[ f'(x) = \frac{f(x)\sec(x)\tan(x) - f(x)\sec^2(x)}{\sin^2(x)} \]

\[ f(x) = \frac{1}{\sec(x) + \tan(x)} \]

\[ f'(x) = \frac{\sec(x)\tan(x) - \sec(x)}{\sec^2(x)} = \frac{1}{\sec(x)} = \frac{\tan(x)}{\sec(x)} \]

\[ (\frac{\pi}{2}), f \text{ undefined} \]

\[ f(x) = \frac{1}{\sec(x)} \]

\[ \text{Web Assignment Questions:} \]
$$\cot = \frac{\cos}{\sin} = \cot \frac{1}{\sin} = \cot \sqrt{1 - \cos^2} \cdot \sqrt{1 + \cos^2}.$$
To use "implicit differentiation":

Given $xy + 2x + 3x^2 = 4$, curve.

1. Take $y$ terms (\( \frac{dy}{dx} \)) of both sides:

   \[
   \frac{d}{dx}(xy + 2x + 3x^2) = \frac{d}{dx}(4)
   \]

2. Differentiate:

   \[
   x \frac{dy}{dx} + y + 2 + 6x = 0
   \]

3. Solve for $\frac{dy}{dx}$:

   \[
   \frac{dy}{dx} = \frac{-x - 2 - 6x}{y}
   \]

   \[
   \frac{dy}{dx} = \frac{-7x - 2}{y}
   \]
Now, find $y$ with "normal" rules:

$$y = \frac{x}{\frac{4}{x} - 2 - 3x}$$

Solu for $y$: $x y = 4 - 2x - 3x^2$

$y$ origina: $x y + 2x + 3x^2 = 4$

Note: $(y-1)$ is on origina curve, and

$$x \left\{ \frac{1}{(1)} \right\} \left( -\frac{1}{(1)} - 2 - 6(1) \right) = -2$$

$$y, = 1$$
\[ y = \frac{1}{x^2} - 3 \]

\[ \frac{dy}{dx} = -\frac{2}{x^3} \]

\[ 4(4x^2 - 2 - 3x) \]

Answer to (a), with \( y = \frac{1}{x} \):

\[ \frac{dy}{dx} = -\frac{1}{x^2} \]
differentiation:

where w can found using implicit

\[ y - 1 = \ln(x - 1) \]

thus \( \ln(a + c) \) has even

\[ x^2 + 9y^2 = 3 \]

\[ 2.5 \]

3
\[ \frac{\partial}{\partial x} \left( \frac{x}{y} \right) = \frac{y}{x^2} \]

\[ \frac{\partial}{\partial y} \left( \frac{x}{y} \right) = -\frac{x}{y^2} \]

\[ \frac{\partial}{\partial x} \left( x^2 + y^2 \right) = 2x \]

\[ \frac{\partial}{\partial y} \left( x^2 + y^2 \right) = 2y \]

Please note that the input is not coherent or complete.
\[ y = \sin(x) + \cos(x) \]
\[ \frac{dy}{dx} = \cos(x) - \sin(x) \]
\[ y = \sqrt{\sin^2(x) + \cos^2(x)} = \sin(x) + \cos(x) \]

11. For the function \( y = -x^2 + 2 \):
   
   \[ y' = -2x \]

12. The slope at \( (1, 1) \): 
   
   \[ y' = -3 \]

The slope at \( (1, 1) \) is \(-3\).
\[ 569.5 = 50x - 59y, \]

\[ 8 \times (x^2 + y^2) + 8y(x^2 + y^2) = 25(2x - 2y)^2 = 25(x^2 + y^2) = 2 \times (x^2 + y^2) \]

Implicit Diff:

\[ 2(x^2 + y^2) = 25(x^2 - y^2) \]

\[ \frac{\sin(y)(\sin(x)) - 1}{\cos(x)(\cos(y) - 1)} = 1 \]

\[ \frac{\sin(y)(\sin(x)) - 1}{\cos(x)(\cos(y) - 1)} = \frac{\sin(y) - \sin(x)}{\cos(y) - \cos(x)} = y \]
If \( x \to 0 \), then \( vy \to 0 \).

So, \( 2x = 0 \) or \( 25 - 4(x^2 + y^2) = 0 \).

So \( 2x = 0 \) or \( 25 - 4(x^2 + y^2) = 0 \).

\( 5x - 8x(x^2 + y^2) = 0 \) so \( x = \frac{9y}{8x} \).

\( 8y(x^2 + y^2) + 50y = 0 \) so \( 50x - 8x(x^2 + y^2) = 0 \).

\[ y = \left[ \frac{6y(x^2 + y^2) + 50y}{8y(x^2 + y^2)} \right] \]
\[
\frac{\frac{9}{52}}{\frac{9}{52}} = \frac{9}{9} = \frac{1}{2}
\]
Substituting, we get \( v = \frac{6}{52} \).

\[
\frac{\frac{9}{52}}{\frac{9}{52}} = \frac{9}{9} = \frac{1}{2}
\]
Add first two, get \( 2u = \frac{25}{52} \).

\[
\frac{\frac{9}{52}}{\frac{9}{52}} = \frac{9}{9} = \frac{1}{2}
\]

So \( 5 + 21 = 25 \), \( 25 (u - v) = 25 (u - v) \)

\[
25 = u + v
\]

Recalculating \( x \) as \( u, v \):

\[
x = x_2 + y_2
\]

So \( 25 = 4(x_2 + y_2) \)