APCalculusAB
Friday,October5,2012

Bellwork...ontheboard

Homework...keep working on the two packets I've given you this week.

Bellwork:

1. Calculate y' if $y = x^2 \sin(\pi x)$.
2. If $g(x)$ is a differentiable function and $f(x) = \frac{1}{g(x)}$, write $f'(x)$ in terms of $g(x)$ and $g'(x)$.
3. Let $g(x)$ be a differentiable function such that $g(1) = \pi$ and $g'(1) = 2$. Find an equation for the tangent line to the curve $y = \cos(g(x))$ at the point where the x-coordinate is 1.

① $y = \underbrace{x^2}\cdot\underbrace{\sin(\pi x)}$

$y' = (\sin(\pi x))\cdot 2x + x^2(\cos(\pi x)\cdot\pi)$

$y' = 2x\sin(\pi x) + \pi x^2\cos(\pi x)$

② $f(x) = \dfrac{1}{g(x)}$

$f'(x) = \dfrac{g(x)\cdot 0 - 1\cdot g'(x)}{[g(x)]^2}$

$f'(x) = \dfrac{-g'(x)}{[g(x)]^2}$

3. Let $g(x)$ be a differentiable function such that $g(1) = \pi$ and $g'(1) = 2$. Find an equation for the tangent line to the curve $y = \cos(g(x))$ at the point where the x-coordinate is 1.

$\rightarrow$ deriv $\rightarrow$ slope

$y = \cos(g(x))$

$y' = -\sin(g(x))\cdot g'(x)$

y' @ $x=1$ $= -\sin(g(1))\cdot g'(1)$

$= (-\sin\pi)\cdot 2$

slope $x=1 \rightarrow$ $= 0$

$y - y_1 = 0(x - x_1)$

Given $g(1) = \pi$

$y = \cos(g(x))$

$y = \cos(\pi)$

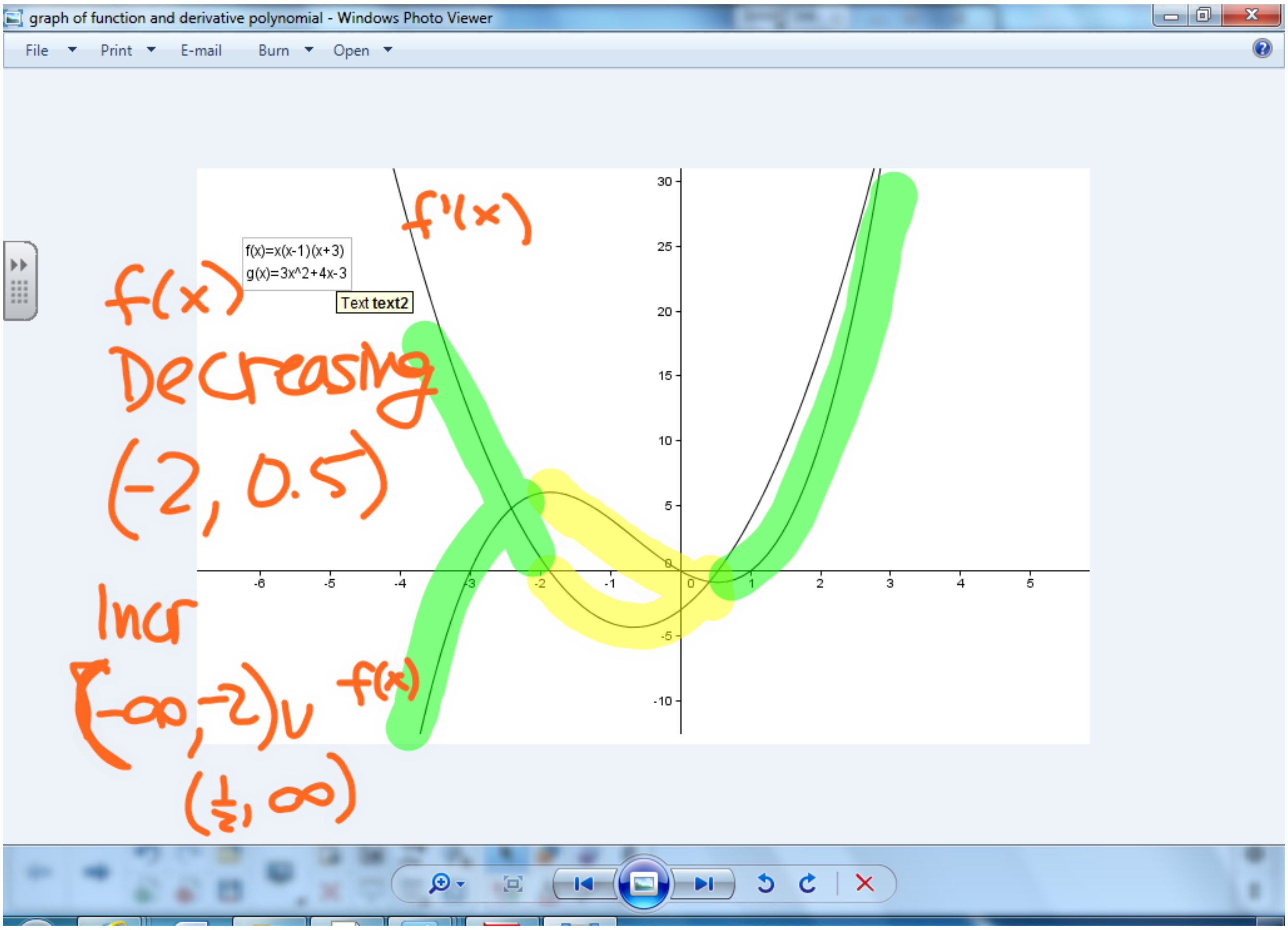
$y = -1$

$(1, -1)$ point on y

Eqn of tangent line

$y + 1 = 0(x - 1)$

$y = -1$


graph of function and derivative polynomial - Windows Photo Viewer
File
Print
E-mail
Burn
Open
f'(x)
f(x)=x(x-1)(x+3)
g(x)=3x^2+4x-3
Text text2
f(x)
Decreasing
(-2, 0.5)
Incr
(-∞, -2) ∪
f(x)
(1/2, ∞)