AP Calculus AB
Thursday, April 24, 2014

Please get an ipad and review the diagnostic.
Any questions?

We will have a RULES quiz shortly.

$\frac{d}{dx}[cu] = c \cdot u'$

$\frac{d}{dx}[4(\sin x)] = 4\cos x$

$\frac{d}{dx}[u \pm v] = u' \pm v'$

$\frac{d}{dx}[uv] = u \cdot v' + v \cdot u'$

Ex. $\frac{d}{dx}[e^x \cdot \tan x] = e^x \cdot \sec^2 x + \tan x \cdot$

$\frac{d}{dx}\left[\frac{u}{v}\right] = \frac{v \cdot u' - u \cdot v'}{v^2}$

Ex. $\frac{d}{dx}\left[\frac{x^2-3}{\sin x}\right] = \frac{(\sin x)(2x) - (\cos x)(x^2$

$\frac{d}{dx}[u^n] = n \cdot u^{n-1} \cdot u'$ "Chain Rule" always in effect

Ex. $\frac{d}{dx}[(x^2-3x+1)^5]$

$5(x^2-3x+1)^4 \cdot (2x-3)$

$\int x^n dx = \frac{x^{n+1}}{n+1} + C$

$\int \frac{1}{x} dx = \ln|x| + C$

(9) $\int_1^2 \frac{dt}{1+t^2} = \int_1^2 \frac{1}{1+t^2} dt$

$\arctan t \Big|_1^2$ $\int \frac{1}{x} dx = \int \frac{x'}{x}$

$= \arctan 2 - \arctan 1$

$= \arctan 2 - \frac{\pi}{4}$

(16) $\int_{-1}^{0} \frac{x}{(2+4x^2)^2} dx$ Let $u = 2+4x^2$

$du = 8x\,dx$

$\frac{1}{8} du = x$

$\int_6^2 \frac{\frac{1}{8} du}{u^2}$

$\frac{1}{8} \int_6^2 u^{-2} du = \frac{1}{8} \frac{u^{-1}}{-1} \Big|_6^2$

$-\frac{1}{8} \cdot 2^{-1} - \left(-\frac{1}{8} \cdot 6^{-1}\right)$