Warm up (NO CALC)

If $f(x) = e^{2x}(x^3 + 1)$, then $f'(2) =$

f g

(A) $6e^4$ (B) $21e^4$ (C) $24e^4$ (D) $30e^4$

$f' = e^{2x} \cdot 2$

$g' = 3x^2$

$[f \cdot g]$

$f'g + fg'$

$f' = 2e^{2x} \cdot (x^3 + 1) + e^{2x} \cdot (3x^2)$

$2e^4(9) + e^4(12)$

$$\lim_{x \to 3} \frac{\tan(x-3)}{3e^{x-3} - x} \text{ is } = \frac{0}{0}$$

$$\frac{\sin(0)}{\cos(0)} = \frac{0}{1} = 0$$

(A) 0   (B) $\frac{1}{3}$ (C) $\frac{1}{2}$ (D) nonexistent

$$\lim_{x \to c} \frac{f(x)}{g(x)} = \frac{11}{2}$$

$$\lim_{x \to c} \frac{f'(x)}{g'(x)}$$

L'hôpital's Rule

$$\lim_{x \to 3} \frac{\sec^2(x-3)}{3e^{x-3} - 1}$$

$$\left[\frac{1}{\cos(0)} \right]^2$$

$$(1)^2 = 1$$

$$\frac{\sec^2(0)}{2}$$

$$\frac{1}{2}$$

Wed Mar 29 - Volumes by cross section
Fri Mar 31 - Reviewing Volume, starting Diff Eq

Q4 day by day

Mon Apr 3 - Assess on Volume
Wed Apr 5 - Slope fields, Separable diff eq
Fri Apr 7 - More on diff eq

[Apr 8 ~~Apr 9~~]
Saturday timed test??

Mon Apr 10 - Assess on diff eq
Wed Apr 12 - timed AP test (all will take)

Mon Apr 17 (B) - review presentations
Wed Apr 19 - review presentations
Fri Apr 21 - Motion, revisited

Mon Apr 24 - AP test
Wed Apr 26 - AP test
Fri Apr 28 - AP test/Proj Due

Review Presentations: info will be handed out Wednesday
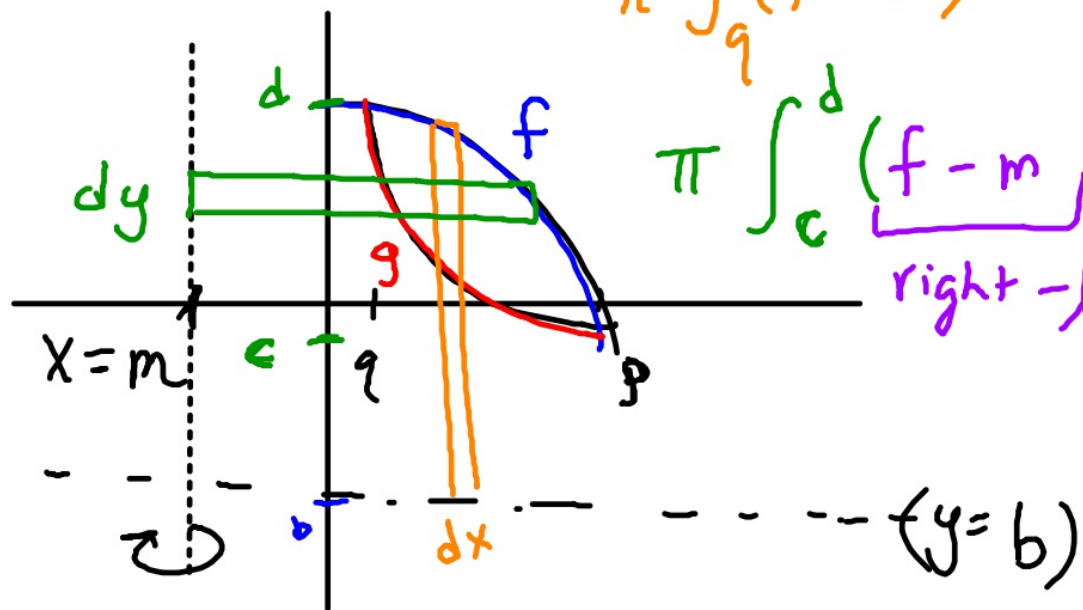
              10 minute presentations on topic, work thru
              example(s) and give practice problems to do with
              answers.

                Product is a presentation + handout

non-testers: Roller Coaster project handed out Wed April 12

testers: homework after April 10 will be combination of pages in
workbook and self-timed FRQs
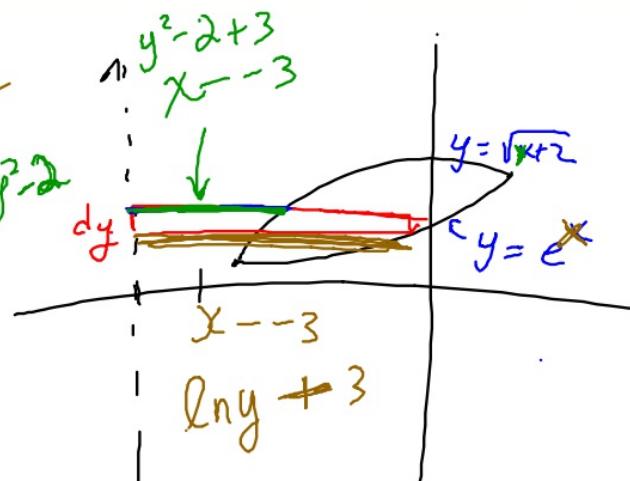
Volume by Revolution, revisited

$$\pi \int_q^p (f-b)^2 - (g-b)^2 \, dx$$

$$\pi \int_c^d \underbrace{(f-m)}_{right-left}^2 - \underbrace{(g-m)}_{right-left}^2 \cdot dy$$

dy

X=m

dx

{y=b)

$y = e^x \implies x = \ln y$

$y = \sqrt{x+2} \implies x = y^2 - 2$

about $\quad x = -3$

$(-1.961, 0.138)$
$(0.448, 1.564)$

$y^2 - 2 + 3$
$x = -3$

$y = \sqrt{x+2}$

dy

$y = e^x$

$x = -3$

$\ln y + 3$

$V = \pi \displaystyle\int \left(\genfrac{}{}{0pt}{}{\text{out.}}{\text{rad}}\right)^2 - \left(\genfrac{}{}{0pt}{}{\text{inner}}{\text{rad}}\right)^2 dy \qquad x = -3$

$\pi \displaystyle\int_{0.138}^{1.564} \left(\ln y + 3\right)^2 - \left(y^2 - 2 + 3\right)^2 dy = \boxed{\begin{array}{c} 4.946\pi \\ \simeq 15.540 \end{array}}$

Homework:

Work on multiple choice packet, due Monday
(will have other hw between now and then so chop chop!)