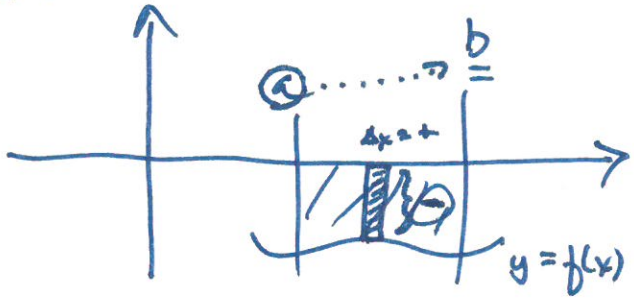
MA121-002

Thursday, November

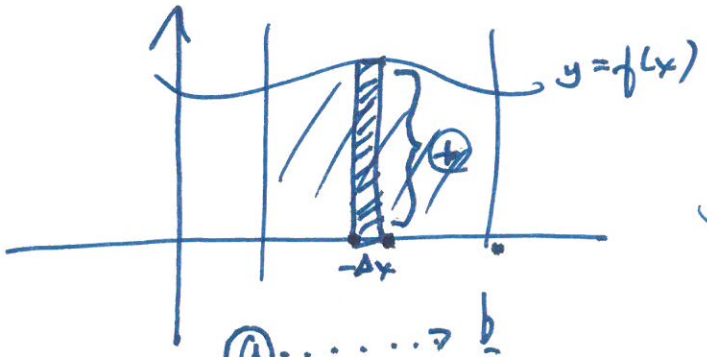
CH4:

NEG. AREA:

(1)



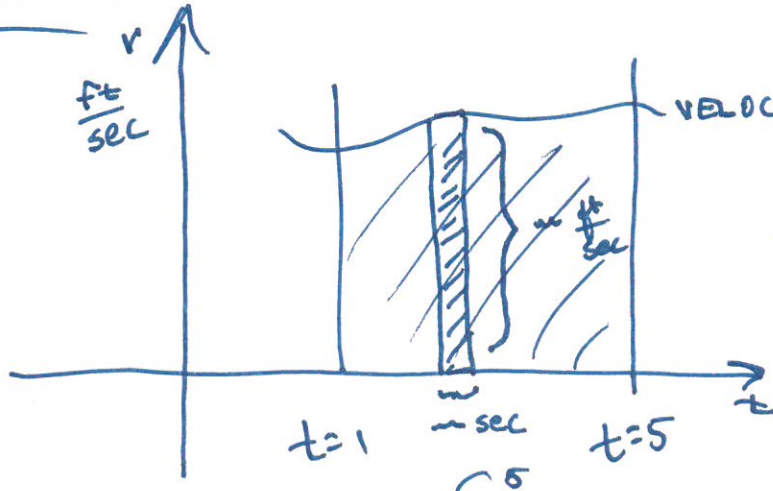
(2)



$$\int_a^b f(x)\,dx = 12$$

$$\int_b^a f(x)\,dx = -12$$

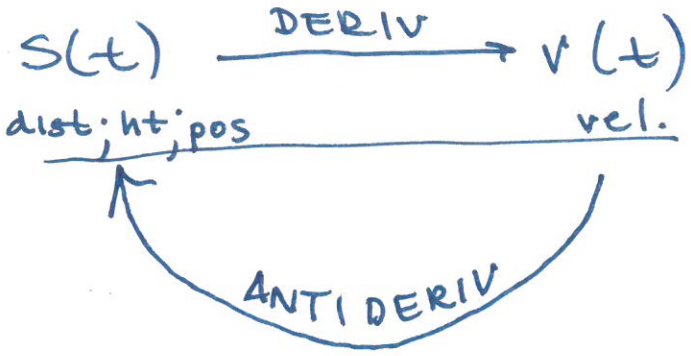
VELOCITY:



$A = (\sim)\left(\frac{ft}{sec}\right)(\sim sec)$

$A = \sim ft$

$$\int_1^5 v(t)\,dt = \sim ft$$



$$\int_a^b v(t)\,dt = s(t)$$

TEST #3: TUES, NOV. 6th

(2.5 3.1 → 3.5 ; 4.1 → 4.3)

2.5: max/min word prob (OPTIMIZATION)

decay rate: 3.8% $k = -.038$

3.1: $d(e^x) = e^x$

chain rule: $d(e^{f(x)}) = e^{f(x)} \cdot f'(x)$

3.2: $d(\ln(x)) = \frac{1}{x}$

chain rule: $d(\ln f(x)) = \frac{1}{f(x)} \cdot f'(x)$

3.3: exponential growth

LOGISTIC: $y = \frac{L}{1+b \cdot e^{kt}}$

3.4: exponential decay $y = y_0 \cdot e^{kt}$ (know this)

NEWTON'S LAW OF COOLING:

$y = a \cdot e^{kt} + m$ ← temp surr. medium

3.5: $d(a^x) = a^x \cdot \ln a$

chain rule:

$$d(a^{f(x)}) = a^{f(x)} \cdot \ln a \cdot f'(x)$$

$$d(\log_a x) = \frac{1}{x \cdot \ln a}$$

chain rule:

$$d(\log_a f(x)) = \frac{1}{f(x) \cdot \ln a} \cdot f'(x)$$

$y = 8^x ; e^{5x}$ find y': prod. rule:

$$y' = 8^x \cdot d(e^{5x}) + e^{5x} \cdot d(8^x)$$

$$y' = 8^x \cdot (e^{5x} \cdot 5) + e^{5x} \cdot (8^x \cdot \ln 8)$$

$$y' = 8^x \cdot e^{5x} [5 + \ln 8]$$

4.1: indef. integrals:

$$\int f(x)dx = F(x) + C$$

↖ family of curves

4.2: areas (no APPROX area)

4.3:

$$A = \int_a^b f(x)dx = F(x)\Big]_a^b = F(b) - F(a)$$

DEF. INTEGRAL