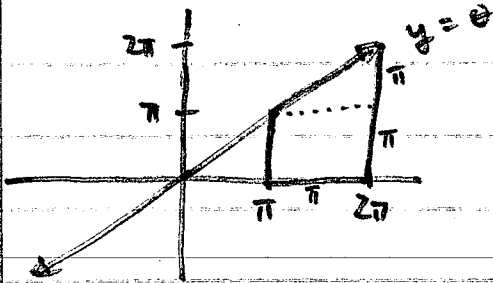


# 5.2

21)  $\int_{\pi}^{2\pi} \theta d\theta$

$$\pi^2 + \frac{1}{2}\pi^2 = \frac{3}{2}\pi^2$$



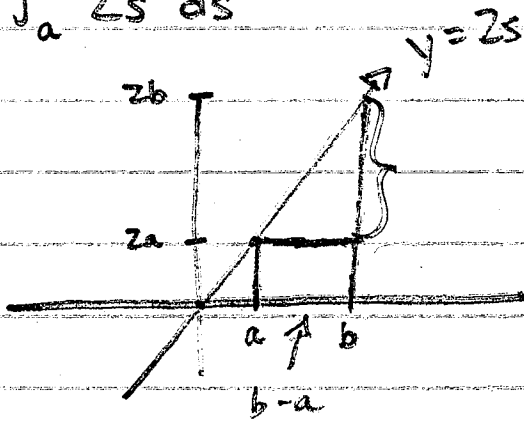
45)  $\lim_{n \rightarrow \infty} \sum_{k=1}^n f(c_k) \Delta x$

$$\frac{b-a}{n}$$

$$\frac{\pi-0}{n} = \left[ \frac{\pi}{n} = \Delta x \right]$$

$$\sum_{k=1}^n \sin(c_k) \left( \frac{\pi}{n} \right)$$

25)  $\int_a^b 2s ds$



$$(b-a)2a + \frac{1}{2}(b-a)(2b-2a)$$

$$2ab - 2a^2 + (b-a)(b-a)$$

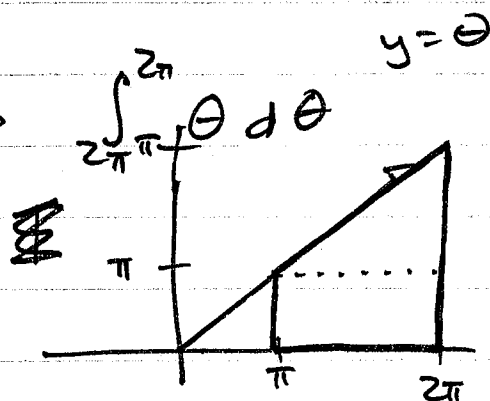
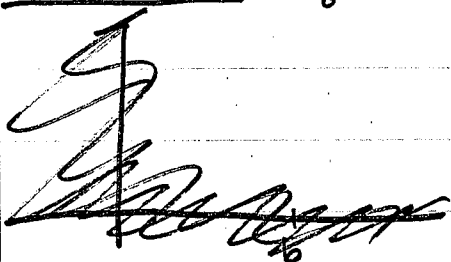
$$2ab - 2a^2 + b^2 - 2ab + a^2$$

$$\boxed{b^2 - a^2}$$

4.2 # 34 |  $f'(x) = \frac{1}{x-1}$   
 $f(x) = \ln|x-1| + C$

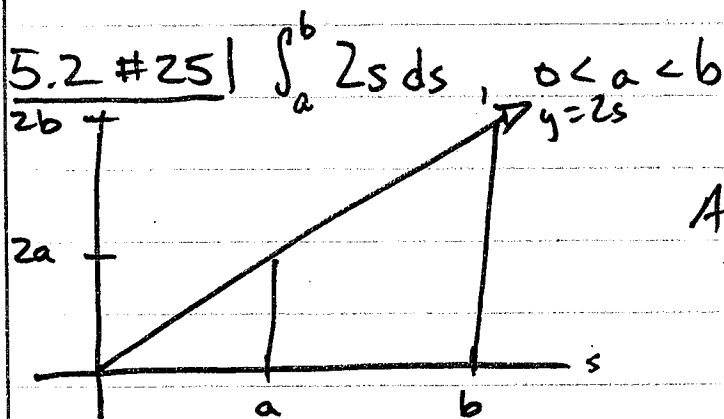
$$\frac{1}{x^2+x}$$

5.2 # 21 |  ~~$\int_a^b x dx$~~



$$A = \frac{1}{2}(\pi + 2\pi)\pi = \frac{3\pi^2}{2}$$

5.2 # 36 |  $y = x^2 e^{-x}$   $x = -1, x = 3$



$$\begin{aligned} A &= \frac{1}{2}(2a + 2b)(b - a) \\ &= (a + b)(b - a) \\ &= ab - ab - a^2 + b^2 \\ &= b^2 - a^2 \end{aligned}$$

4.2 # 44 |  $a(t) = -9.8$   $v(0) = -9.8(0) + C = 0$   
 $v(t) = -9.8t + C$   $C = 0$

$$v(t) = -9.8t$$

$$s(t) = -4.9t^2 + C$$

$$s(0) = -4.9(0)^2 + C = 10$$

$$C = 10$$

$$v(t) = -9.8(1.429)$$

$$= -14 \text{ m/sec}$$

$$s(t) = -4.9t^2 + 10$$

$$0 = -4.9t^2 + 10$$

$$4.9t^2 = 10$$

$$t^2 = \frac{10}{4.9}$$

$$t = \sqrt{\frac{10}{4.9}}$$

$$\approx 1.429 \text{ sec}$$

$$(b) a(t) = -9.8$$

$$v(t) = -9.8t + C$$

$$v(t) = -9.8t + 2$$

$$s(t) = -4.9t^2 + 2t + 10$$

$$1.647$$

$$v(1.647) = -9.8(1.647) + 2$$
$$= -14.142 \text{ m/s}$$