

5.2

203 #43

$$a(t) = 1.6$$

$$v(t) = 1.6t + C$$

$$v(0) = 1.6(0) + C = 0$$

$$C = 0$$

$$v(t) = 1.6t$$

(a) $v(30) = 1.6(30) = 48 \text{ m/sec}$

(b) $s(t) = \frac{1.6}{2} t^2 + C$

~~$s(t) = .8t^2 + C$~~ \Rightarrow

$$s(t) = .8t^2$$

$$= .8(30)^2$$

$$= 720 \text{ meters}$$

~~$s(30) = 720$~~

(c) $v(t) = 1.6t + C$

$$v(0) = 1.6(0) + C = 4$$

$$C = 4$$

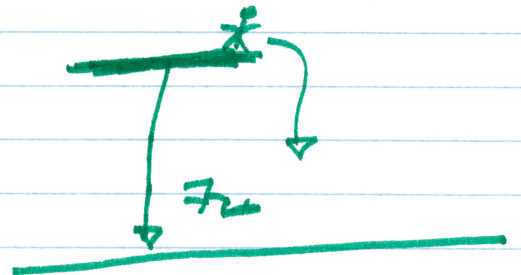
$$v(t) = 1.6t + 4$$

$$s(t) = .8t^2 + 4t + C$$

$$= .8t^2 + 4t = 720$$

$$.8t^2 + 4t - 720 = 0$$

$$t = 27.604 \text{ sec.}$$

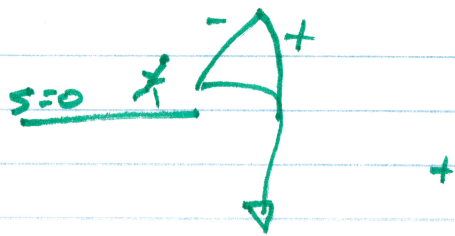


$$v(\text{ANS}) = 1.6(\text{ANS}) + 4$$

$$= 48.166 \text{ m/sec.}$$

5.2

203 #44



(a) $a = 9.8$ $\downarrow v_0$

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

$$v(t) = 9.8t$$

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

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

$$t = 1.44 \text{ ---}$$

$$v(\text{ANS}) = 9.8(\text{ANS})$$

$$= 14.007 \text{ m/sec}$$

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

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

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

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

$$t = 1.646 \text{ ---}$$

$$v(\text{ANS}) = 9.8(\text{ANS}) - 2$$

$$= 14.149 \text{ m/sec}$$

$$\frac{d}{dx} \ln x = \frac{1}{x}$$

203 #34

$$f'(x) = \frac{1}{x-1}$$

$$\frac{1}{0} (x-1)^{-1+1} = 0$$

$$f(x) = \ln |x-1| + C$$

203 #37

$$f'(x) = \frac{1}{x+2}$$

$$f(-1) = \ln |-1+2| + C = 3$$

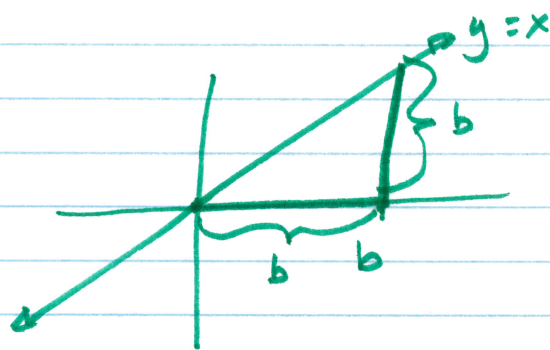
$$\ln 1 + C = 3$$

$$f(x) = \ln |x+2| + C$$

$$y = \ln |x+2| + 3$$

$$C = 3$$

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 (23) $\int_0^b x \, dx$

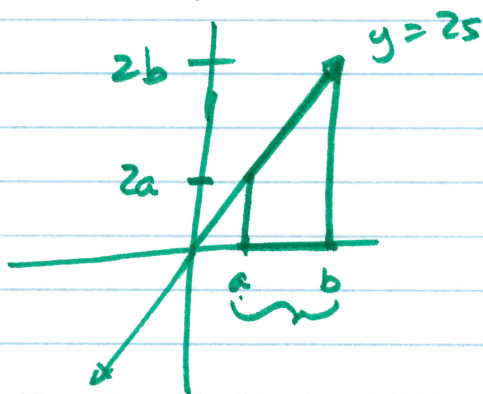


$$A = \frac{1}{2} b h$$

$$= \frac{1}{2} b \cdot b$$

$$= \frac{b^2}{2}$$

(25) $\int_a^b 2s \, ds$



$$A = \frac{1}{2} (b_1 + b_2) h$$

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

$$= (a + b) (b - a)$$

$$= b^2 - a^2$$

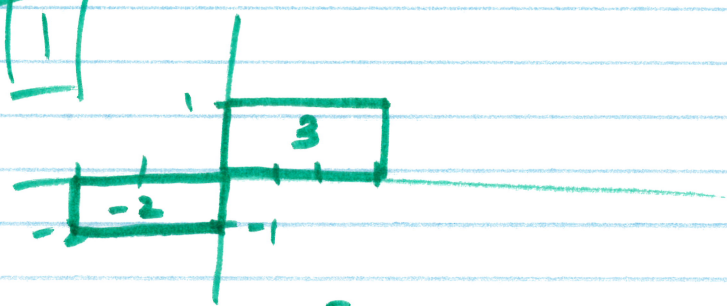
NINT - Numerical Integral \rightarrow "calculator"

(35) $y = 4 - x^2$ from $x = -2$ to $x = 2$

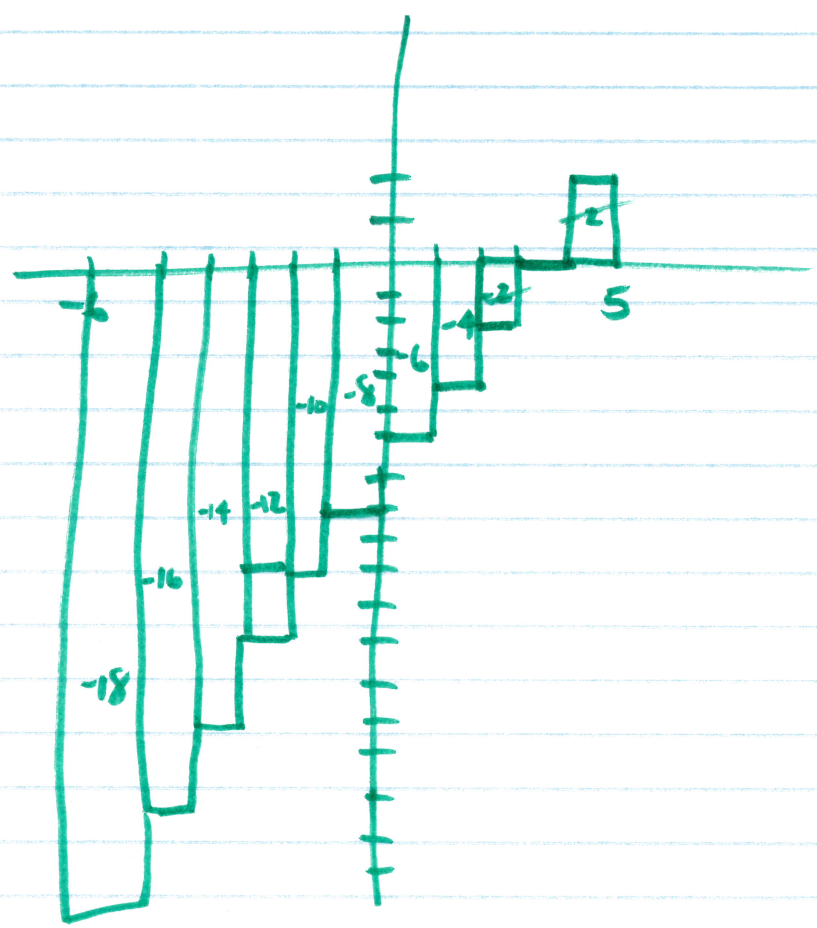
[[x]]

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(37) $\int_{-2}^3 \frac{x}{|x|} dx = \boxed{1}$



(38) $\int_{-6}^5 2 \llbracket x-3 \rrbracket dx = -88$ $\int_{-6}^5 2 \ln + (x-3) dx$



4.2
35) $f'(x) = -\frac{1}{x^2}$ (2,1)

$$f'(x) = -x^{-2}$$

$$f(x) = x^{-1} + C$$

$$f(x) = \frac{1}{x} + \frac{1}{2}$$

$$1 = 2^{-1} + C$$

$$\frac{1}{2} = \frac{1}{2} + C$$

$$\frac{1}{2} = C$$

$$(x+2)^{-1} \quad \frac{1}{0(x+2)^0}$$

37) $f'(x) = \frac{1}{x+2}$ (-1,3)

$$f(x) = \ln|x+2| + C$$

$$f(x) = \ln|x+2| + 3$$

$$3 = \ln|-1+2| + C$$

$$3 = \ln 1 + C$$

$$3 = C$$

36) $f'(x) = \frac{1}{4x^{5/4}}$ (1,-2)

$$f'(x) = \frac{1}{4}x^{-5/4}$$

$$f(x) = x^{-1/4} + C$$

$$f(x) = x^{-1/4} - 3$$

$$-2 = 1^{-1/4} + C$$

$$= \sqrt[4]{x} - 3$$

$$-2 = 1 + C$$

$$-3 = C$$

4.2

(38) $f'(x) = 2x + 1 - \cos x$ $(0, 3)$

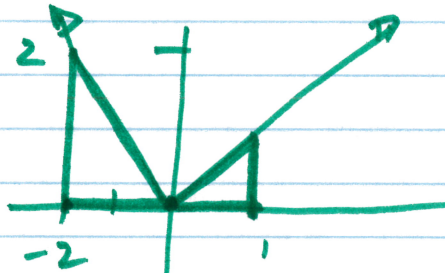
$F(x) = x^2 + x - \sin x + C$ $f(x) = x^2 + x - \sin x + 3$

$3 = 0^2 + 0 - \sin 0 + C$

$3 = C$

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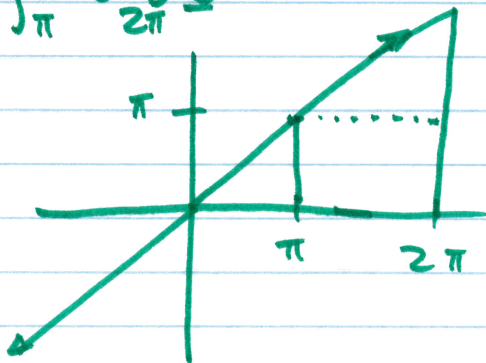
(17) $\int_{-2}^1 |x| dx$



$\frac{1}{2} (2)(2)$ $\frac{1}{2} (1)(1)$

$2 + \frac{1}{2} = 2\frac{1}{2}$

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



$\pi(\pi) + \frac{1}{2} \pi \cdot \pi$

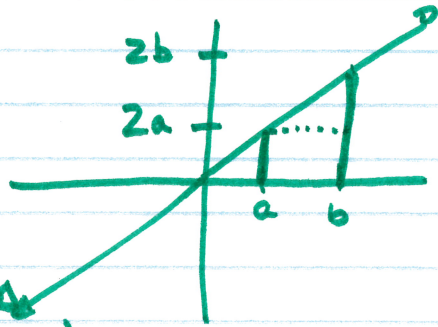
$\pi^2 + \frac{1}{2} \pi^2 = 1\frac{1}{2} \pi^2$

$\frac{3}{2} \pi^2$
 $1.5 \pi^2$

5.2

(25)

$$\int_a^b 2s \, ds \quad \underline{0 < a < b}$$



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

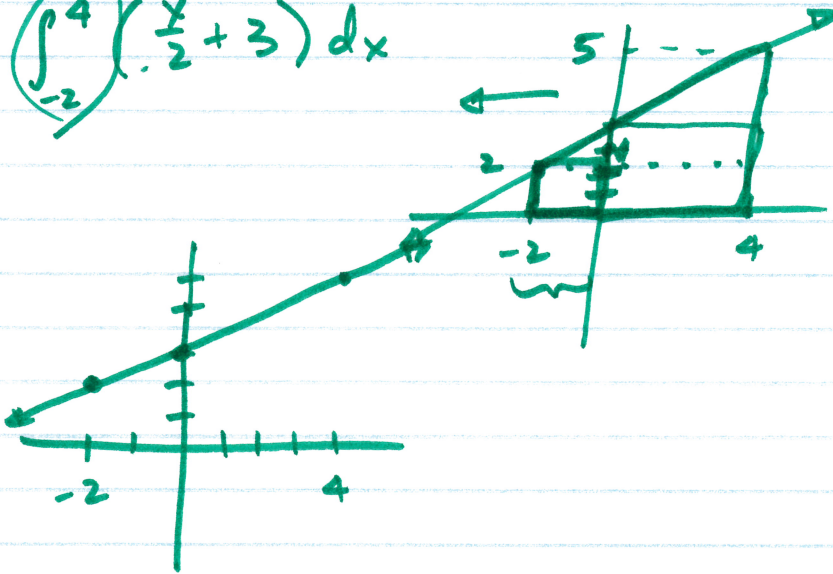
$$2ab - 2a^2 + (b-a)(b-a)$$

$$\cancel{2ab} - 2a^2 + b^2 - \cancel{2ab} + a^2$$

$$b^2 - a^2$$

(13)

$$\int_{-2}^4 \left(\frac{x}{2} + 3 \right) dx$$



$$6(2) + \frac{1}{2}(6)(3)$$

$$12 + 9 = \textcircled{21}$$