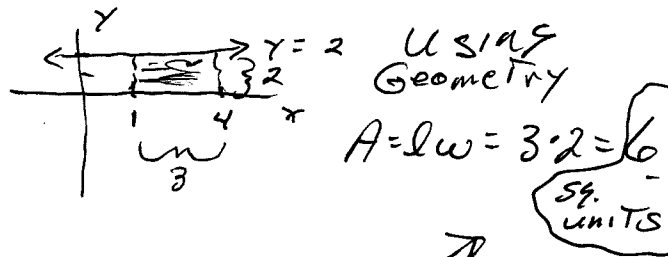


6.4 Pg. 453 (1, 3, 5, 17, 19, 23, 27)

1.  $f(x) = 2; [1, 4]$

$$\int_1^4 2 dx = 2x \Big|_1^4$$

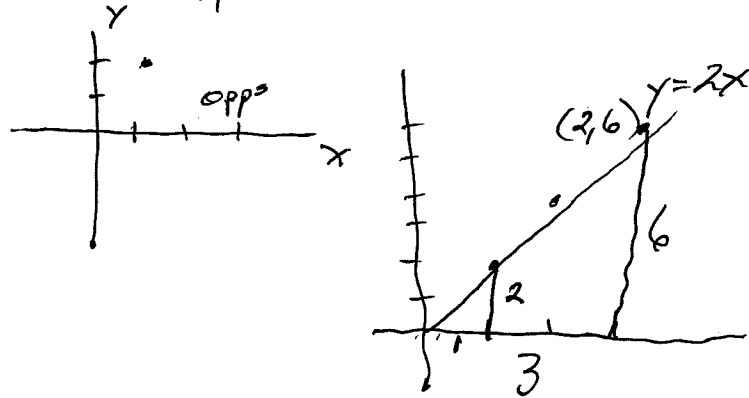
$$= 8 - 2 = 6 \text{ sq. units}$$



3.  $f(x) = 2x; [1, 3]$

$$\int_1^3 2x dx = 2 \left( \frac{1}{2} \right) x^2 = x^2 \Big|_1^3 = 9 - 1 = 8 \text{ sq. units}$$

using Geometry



5.  $f(x) = 2x + 3; [-1, 2]$

$$\int_{-1}^2 (2x + 3) dx$$

$$= 2 \left( \frac{1}{2} \right) x^2 + 3x \Big|_{-1}^2$$

$$= (4 + 6) - (1 - 3)$$

$$= 10 - (-2)$$

$$= 10 + 2$$

$$= 12 \text{ sq. units}$$

$$A_{\Delta} = \frac{1}{2}bh \quad A_{\text{large } \Delta} = \frac{1}{2}(3 \cdot 6) = 9$$

$$A_{\text{small } \Delta} = \frac{1}{2}(1 \cdot 2) = 1$$

$$A_{[-1, 2]} = A_{\text{large}} - A_{\text{small}} = 9 - 1$$

$$= 8 \text{ sq. units}$$

6.4 cont. Pg 453 (17, 19, 23, 27)

$$17. \int_2^4 3 dx = 3x \Big|_2^4 = 12 - 6 = \boxed{6}$$

$$19. \int_1^4 (2x+3) dx = x^2 + 3x \Big|_1^4 = (16+12) - (1+3) \\ = 28 - 4 = \boxed{24}$$

$$23. \int_{-2}^2 (x^2-1) dx = \frac{1}{3}x^3 - x \Big|_{-2}^2 \\ = \left(\frac{1}{3}(8) - 2\right) - \left(\frac{1}{3}(-8) - (-2)\right) \\ = \left(\frac{8}{3} - \frac{6}{3}\right) - \left(-\frac{8}{3} + \frac{6}{3}\right) \\ = \frac{2}{3} - \left(-\frac{2}{3}\right) = \frac{2}{3} + \frac{2}{3} = \boxed{\frac{4}{3}}$$

$$27. \int_0^1 (x^3 - 2x^2 + 1) dx \\ = \left(\frac{1}{4}\right)x^4 - \left(\frac{2}{3}\right)x^3 + x \Big|_0^1 \\ = \left(\frac{1}{4} - \frac{2}{3} + 1\right) - 0 = \left(\frac{3}{12} - \frac{8}{12} + \frac{12}{12}\right) \\ = \left(\frac{3}{12} + \frac{4}{12}\right) = \boxed{\frac{7}{12}}$$