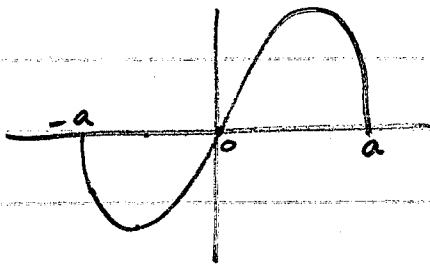


7.2

19



$$-\frac{1}{2} \int_0^{-a} x \sqrt{a^2 - x^2}^{-2} dx + \frac{1}{2} \int_0^a x \sqrt{a^2 - x^2}^{-2} dx$$

$$u = a^2 - x^2$$

$$du = -2x dx$$

$$-\frac{1}{2} \int_a^0 u^{1/2} du \leftarrow$$

$$-\frac{1}{2} \left[ \frac{2}{3} u^{3/2} \right]_a^0$$

$$-\frac{1}{3} \left[ 0^{3/2} - (a^2)^{3/2} \right]$$

$$-\frac{1}{3} [-a^3]$$

$$\frac{1}{3} a^3 + \frac{1}{3} a^3 = \boxed{\frac{2}{3} a^3}$$

11

$$y^2 = x+1, y^2 = 3-x \quad x = 1, -1, 3$$

$$y = \pm \sqrt{x+1} \quad y = \pm \sqrt{3-x}$$

$$\int_{-1}^1 (\sqrt{x+1} - -\sqrt{x+1}) dx + \int_1^3 (\sqrt{3-x} - -\sqrt{3-x}) dx$$

$$\int_{-1}^1 2\sqrt{x+1} dx + \int_1^3 2\sqrt{3-x} dx \approx 7.542$$

35

$$y^2 = x+3, y = 2x \quad \text{ON OR ABOVE X-AXIS}$$

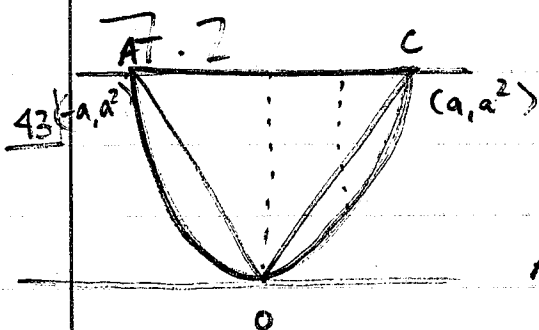
$$y = \pm \sqrt{x+3}$$

$$\int_0^1 (\sqrt{x+3} - 2x) dx = .869 + \int_3^0 \sqrt{x+3} dx$$

$$3.464$$

$$\boxed{4.333}$$





$$A_{\Delta} = \frac{1}{2} (2a) a^2 = a^3$$

$$A_p = \int_{-a}^a (a^2 - x^2) dx$$

$$= \left[ a^2 x - \frac{1}{3} x^3 \right]_{-a}^a$$

$$\left[ a^2(a) - \frac{1}{3}(a^3) \right] - \left[ a^2(-a) - \frac{1}{3}(-a)^3 \right]$$

$$a^3 - \frac{1}{3}a^3 + a^3 - \frac{1}{3}a^3 = \frac{4}{3}a^3$$

$$\lim_{a \rightarrow 0} \frac{a^3}{\frac{4}{3}a^3} = \lim_{a \rightarrow 0} \frac{1}{\frac{4}{3}} = \lim_{a \rightarrow 0} \frac{3}{4} = \boxed{\frac{3}{4}}$$

25

$$x + y^2 = 0 \quad x + 3y^2 = 2$$

$$x = -y^2 \quad x = 2 - 3y^2$$

$$y = -x^2 \quad y = 2 - 3x^2$$

$$\int_{-1}^1 (2 - 3x^2 - (-x^2)) dx \approx 2.667$$

27

$$x + y^2 = 3 \quad 4x + y^2 = 0$$

$$x = 3 - y^2 \quad 4x = -y^2$$

$$y = 3 - x^2 \quad x = -\frac{1}{4}y^2$$

$$y = -\frac{1}{4}x^2$$

$$\int_{-2}^2 (3 - x^2 - (-\frac{1}{4}x^2)) dx = 8$$