

7.2

27) $x + y^2 = 3$

$y^2 = 3 - x$

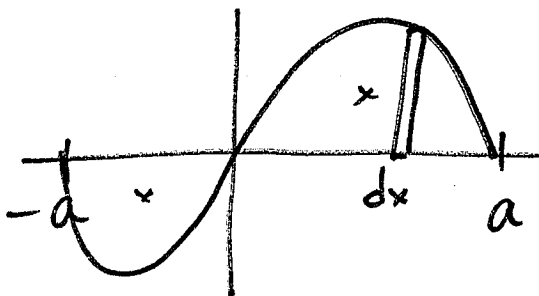
$y = \pm\sqrt{3-x}$

$4x + y^2 = 0$

$y^2 = -4x$

$y = \pm\sqrt{-4x}$

19) $y = x\sqrt{a^2 - x^2}$, $a > 0$ $\frac{1}{2} y = 0$



$-\frac{1}{2} \cdot 2 \int_0^a x\sqrt{a^2 - x^2} dx$ [-2] du

$u = a^2 - x^2$

$du = -2x dx$

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

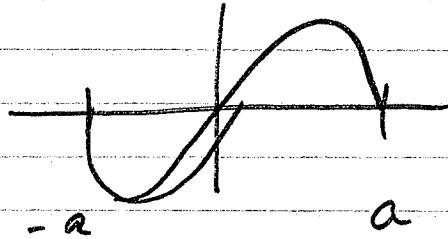
$-\left| \frac{2}{3} u^{3/2} \right|_a^0$

$-\frac{2}{3} (0)^{3/2} + \frac{2}{3} (a^2)^{3/2}$

$\frac{2}{3} a^3$

7.2

19) $y = x\sqrt{a^2 - x^2}$, $y = 0$



$$\int_{-a}^0 x\sqrt{a^2 - x^2} dx + \int_0^a x\sqrt{a^2 - x^2} dx$$

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

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

$$du = -2x dx$$

$$-\frac{1}{2} \int_0^{a^2} u^{1/2} du$$

$$-\frac{1}{2} \left[\frac{2}{3} u^{3/2} \right]_0^{a^2}$$

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

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

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

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

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

$$\frac{1}{3} a^3$$

$$\boxed{\frac{2}{3} a^3}$$

25) $x + y^2 = 0$, $x + 3y^2 = 2$
 $x = -y^2$, $x = 2 - 3y^2$

$$y = x^2$$

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

$$\int_{-1}^1 [(2 - 3x^2) - (-x^2)] dx = 2.667$$

$$y^2 = -x$$

$$y = \pm \sqrt{-x}$$

7.2

$$21) y = |x^2 - 4|, y = \frac{x^2}{2} + 4 \quad \int_{-4}^4 \left[\left(\frac{x^2}{2} + 4 \right) - |x^2 - 4| \right] dx = 21.333$$

$$23) \begin{array}{l} y^2 - 4x = 4 \\ y^2 - 4 = 4x \\ \frac{1}{4}y^2 - 1 = x \end{array} \quad \begin{array}{l} 4x - y = 16 \\ 4x = y + 16 \\ x = \frac{1}{4}y + 4 \end{array}$$

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

$$31) y = \sin(\pi x/2), y = x \quad \int_{-1}^0 [x - \sin(\pi x/2)] dx + \int_0^1 [\sin(\pi x/2) - x] dx$$

$$.13661977 + .13661977$$

$$\boxed{.273}$$