

DIA	MES	AÑO	FOLIO

Volumen 2da parte 11, 13, 19, 37, 39, 41, 43

$$11. \ y = x^3, y = 8, x > 0$$

y es el alrededor del eje x

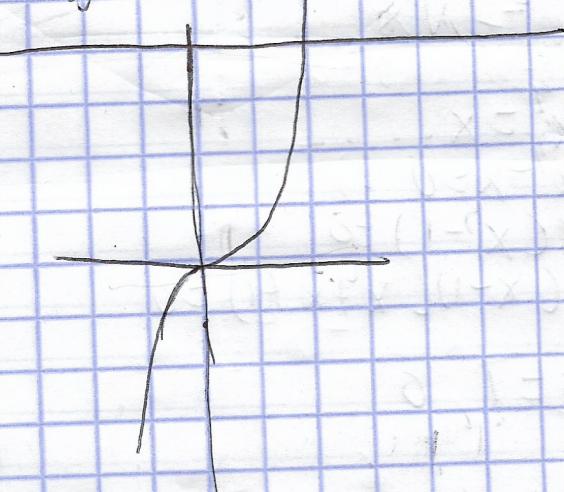
$$x^3 = 8$$

$$x = \sqrt[3]{8}$$

$$x^3 - 8 = 0$$

$$x = \sqrt[3]{8}$$

$$(x-1)^2, x=1 \\ x=0, 2$$



$$\int_0^2 2\pi(x)(x^3 - 8) dx$$

$$20. \int_0^2 x^4 - 8x^2 dx = 2\pi \left[ \frac{x^5}{5} - 8x^3 \right] \Big|_0^2$$

$$= 2\pi \left[ \frac{32}{5} - 16 \right] = 2\pi \left[ \frac{32 - 80}{5} \right]$$

$$= 2\pi \left[ -\frac{48}{5} \right] = -\frac{96}{5}\pi$$

FECHADO	AÑO	MES	DIA	DIA	MES	AÑO	FOLIO

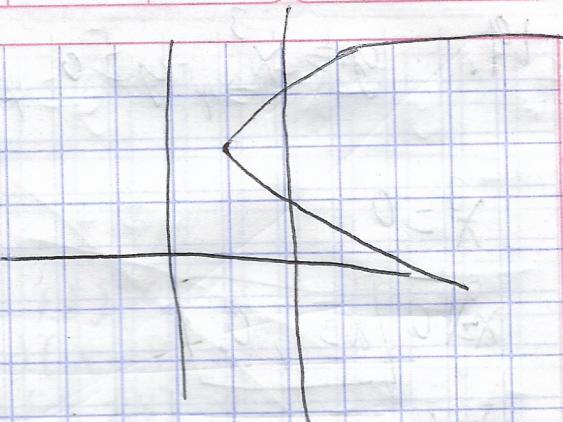
$$(3) \quad x = 1 + (y-2)^2, \quad x=2$$

$$y=1, \quad x=2$$

$$1 + y^2 - 4y + 4 = 2$$

$$y^2 - 4y + 3 = 0$$

$$(y-3)(y-1) \Rightarrow y=3, 1$$



$$\int_1^3 2\pi y (y^2 - 4y + 3) dy = \int_1^3 2\pi y^3 - 8y^2 + 3y dy$$

$$= 2\pi \left[ \frac{y^4}{4} - \frac{8y^3}{3} + \frac{3y^2}{2} \right]_1^3$$

$$= 2\pi \left[ \frac{81}{4} - \frac{108}{3} + \frac{27}{4} \right] - \left[ \frac{1}{4} - \frac{8}{3} + \frac{3}{2} \right]$$

$$= 2\pi \left[ \frac{175}{4} - \frac{108}{3} - \frac{1}{4} + \frac{9}{2} - \frac{6}{4} \right]$$

$$= 2\pi \left[ \frac{178}{4} - \frac{104}{3} \right] = 2\pi \left[ \frac{384}{12} - \frac{416}{12} \right]$$

$$= 2\pi \left[ -\frac{32}{12} \right] = -\frac{32}{6}\pi = \boxed{\frac{16}{3}\pi}$$

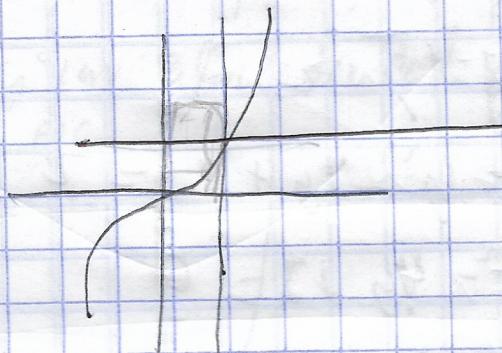
FORMA	AÑO	MES	DIA	DIA	MES	AÑO	FOLIO

19.  $y = x^3$ ,  $y \geq 0$ ,  $x=1$ , área entre  $y \geq 1$

$$x=0$$

$$\sqrt[3]{0} \mid x=1, 0$$

$$x=0$$



$$20 \int_0^1 (1+x)(x^3) dx$$

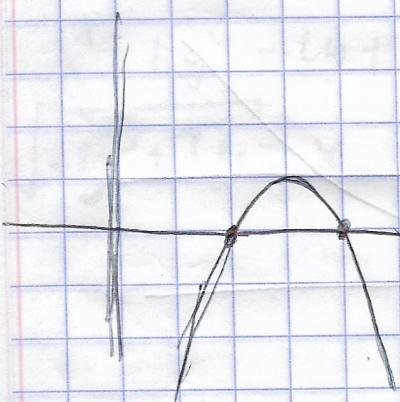
$$20 \int_0^1 (x^3 + x^4) dx = 20 \left[ \frac{x^4}{4} + \frac{x^5}{5} \right]_0^1$$

$$20 \left[ \frac{1}{4} + \frac{1}{5} \right] = 20 \left[ \frac{9}{20} \right] = \frac{18}{2} \pi$$

$$= \frac{9}{10} \pi$$

FOLIO		AÑO	MES	DÍA	DÍA	MES	AÑO	FOLIO
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37.  $y = -x^2 + 6x - 8$ ,  $y \geq 0$  gira en y



$$\begin{aligned} -x^2 + 6x - 8 &= 0 \\ -(x^2 - 6x + 8) &= 0 \\ -(x-2)(x-4) &= 0 \\ (x-2)(x-4) &= 0 \end{aligned}$$

$$\Rightarrow x = 2, x = 4$$

$$2\pi \int_2^4 x [-x^2 + 6x - 8] dx$$

$$\begin{aligned} &= 2\pi \int_2^4 -x^3 + 6x^2 - 8x \, dx \\ &= 2\pi \left[ -x^4 + 2x^3 - 4x^2 \right] \Big|_2^4 \end{aligned}$$

$$= 2\pi \left[ -\frac{4^4}{4} + 2(2^3) - 4(2^2) \right] = \left[ -\frac{256}{4} + 2(8) - 4(4) \right]$$

$$= 2\pi [-64 + 128 - 64] + 4 - 16 + 16$$

$$= 2\pi [4]$$

$$= 8\pi$$

DIA	MES	AÑO	FOLIO

39.  $y^2 - x^2 = 1$   $y \geq 0$  calcular el área de  $x$

$$y = \sqrt{x^2 + 1} \quad y = 2$$

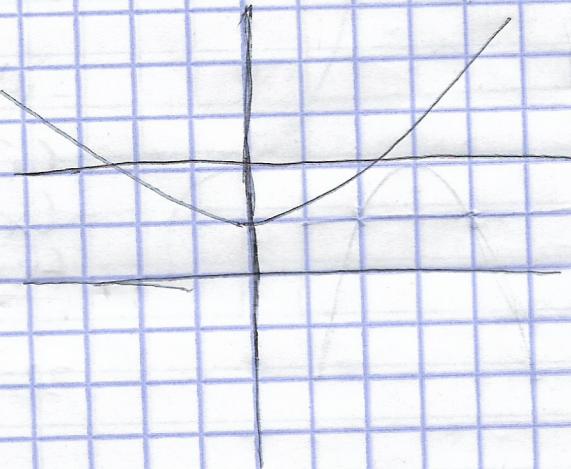
$$\sqrt{x^2 + 1} = 2$$

$$x^2 + 1 = 4$$

$$x^2 = 3$$

$$(x - \sqrt{3})(x + \sqrt{3}) = 0$$

$$\Rightarrow x = \sqrt{3}, -\sqrt{3}$$



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

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

$$= \pi \left[ \left( 3x - \frac{x^3}{3} \right) \right] \Big|_{-\sqrt{3}}^{\sqrt{3}}$$

$$= \pi \left[ \left( 3\sqrt{3} - \frac{(\sqrt{3})^3}{3} \right) + \left( 3\sqrt{3} - \frac{(-\sqrt{3})^3}{3} \right) \right]$$

$$= \pi (10\sqrt{3} - 2(\frac{\sqrt{3}}{3})^3)$$

$$\approx \pi (13.85)$$

FOLIO		ANIO	MES	DIA	DIA	MES	AÑO	FOLIO

41.  $x^2 + (y-1)^2 = 1$  - Alrededor de  $y=1$

$$x^2 + y^2 - 2y + 1 = 1$$

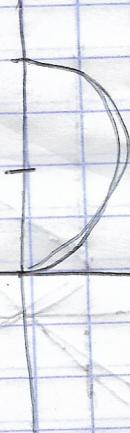
$$\sqrt{x^2 + 2y} = x$$

$$\sqrt{2y - y^2} = 0$$

$$2y - y^2 = 0$$

$$y(2-y) = 0$$

$$y = (0, 2)$$



$$\int_0^2 \pi (\sqrt{2y - y^2})^2 dy = \int_0^2 \pi (2y - y^2) dy$$

$$= \pi \left[ 2y - \frac{y^3}{3} \right]_0^2$$

$$= \pi \left[ 2 \cdot 2 - \frac{8}{3} \right]$$

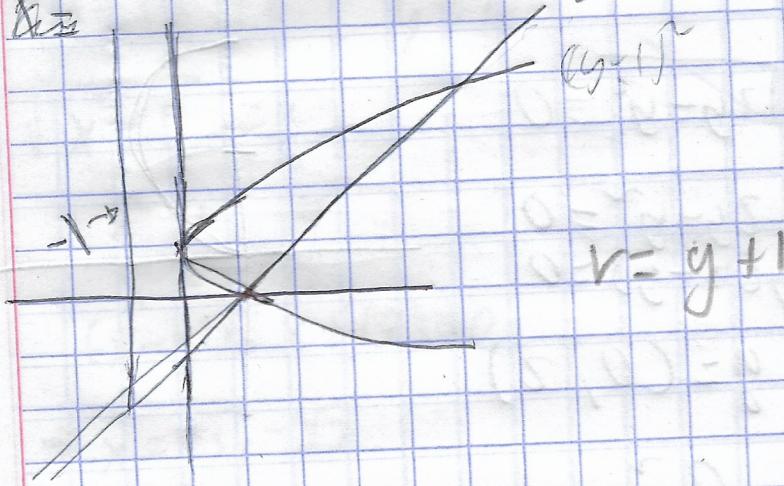
$$= \pi \left[ \frac{4}{3} \right]$$

$$= \pi \left[ \frac{4}{3} \right]$$

ONO	ONB	ONM	ONL	DIA	MES	AÑO	FOLIO

43.  $x = (y-1)^2$   $x-y=1$  al revés de  $x=-1$

$\Delta z$



$$y^2 - 2y + 1 = y + 1$$

$$y^2 - 3y = 0$$

$$y(y-3) = 0$$

$$y = (0, 3)$$

$$\int_0^3 2\pi(y+1)(y+1) - y^2 + 2y - 1 \, dy = \int_0^3 2\pi(y^2 + 3y + 1) - (-y^2 + 3y) \, dy$$

$$= \int_0^3 2\pi(y^2 + 3y^2 - y^2 + 3y) \, dy = 2\pi \int_0^3 -y^3 + 2y^2 + 3y \, dy$$

$$= 2\pi \left[ -\frac{y^4}{4} + \frac{2y^3}{3} + \frac{3y^2}{2} \right]_0^3 = 2\pi \left[ -\frac{81}{4} + 2(27) + \frac{81}{2} \right]$$

$$= 2\pi \left[ -\frac{81}{4} + \frac{54}{3} + \frac{27}{2} \right] = 2\pi \left[ 2\frac{7}{2} - \frac{27}{3} \right] = \boxed{9\pi}$$