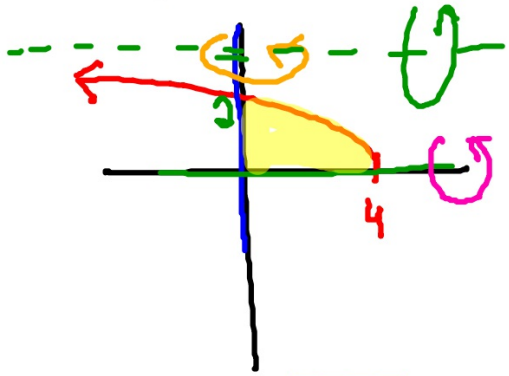
1. $y = \sqrt{4-x}$, $x = 0$, $y = 0$ about :

a) x - axis b) y - axis c) y = 3



a) $\int_0^4 \pi\left(\sqrt{4-x}^2 - 0^2\right)dx$

b) $\int_0^2 \pi\left((-y^2+4)^2 - 0^2\right)dy$

c) $\int_0^4 \pi\left((3-0)^2 - (3-\sqrt{4-x})^2\right)dx$

$y = \sqrt{4-x}$

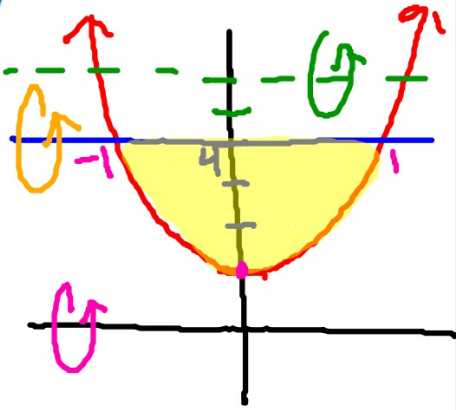
$y^2 = 4-x$

$y^2 - 4 = -x$

$-y^2 + 4 = x$

2. $y = 3x^2 + 1$, $y = 4$ about :

a) x - axis b) y = 4 c) y = 6



Y=0

a) $\int_{-1}^{1} \pi\left(4^2 - (3x^2+1)^2\right) dx$

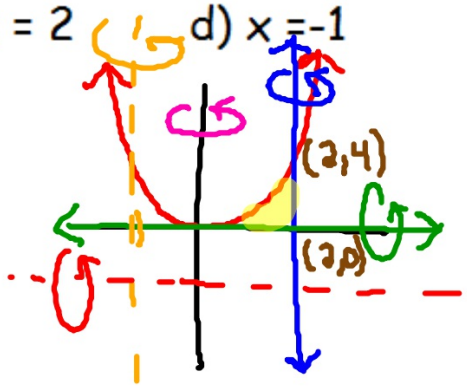
b) $\int_{-1}^{1} \pi\left(\left(4-(3x^2+1)\right)^2 - (4-4)^2\right) dx$

c) $\int_{-1}^{1} \pi\left(\left(6-(3x^2+1)\right)^2 - (6-4)^2\right) dx$

3. $y = x^2$, $x = 2$, $y = 0$ about :

a) x - axis b) y - axis c) x = 2 d) x = -1

e) y=-1



a) $\int_0^2 \pi\left((x^2)^2 - (0)^2\right)dx$

b) $\int_0^4 \pi\left(2^2 - (\sqrt{y})^2\right)dy$

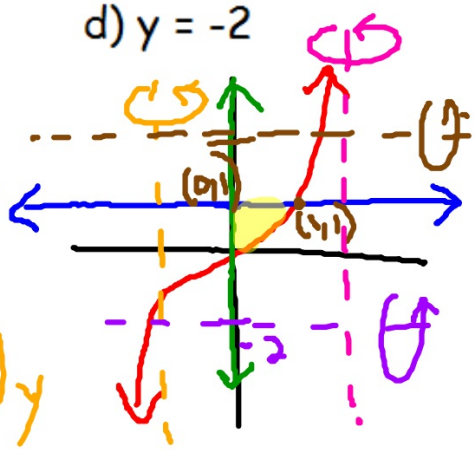
c) $\int_0^4 \pi\left((2-\sqrt{y})^2 - (2-2)^2\right)dy$

d) $\int_0^4 \pi\left((2-(-1))^2 - (\sqrt{y}-(-1))^2\right)dy$

e) $\int_0^2 \pi\left((x^2-(-1))^2 - (0-(-1))^2\right)dx$

4. $y = x^3$, $y = 1$, $x = 0$ about :

a) x = 2 b) x = -2 c) y = 2 d) y = -2



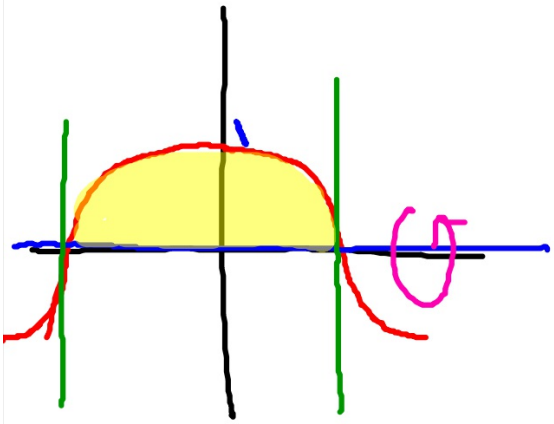
a) $\int_0^1 \pi\left((2-0)^2-(2-\sqrt[3]{y})^2\right)dy$

b) $\int_0^1 \pi\left((\sqrt[3]{y}-(-2))^2-(0-(-2))^2\right)dy$

c) $\int_0^1 \pi\left((2-x^3)^2-(2-1)^2\right)dx$

d) $\int_0^1 \pi\left((1-(-2))^2-(x^3-(-2))^2\right)dx$

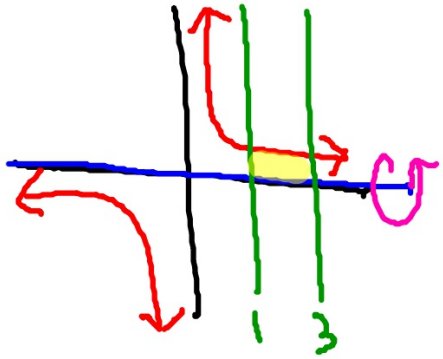
5. $y = \cos(x)$, $x = -\frac{\pi}{2}$, $x = \frac{\pi}{2}$, $y = 0$ about x-axis



$$\int_{-\frac{\pi}{2}}^{\frac{\pi}{2}} \pi\left(\left(\cos(x)\right)^2 - 0^2\right) dx$$

$4.935\,u^3$

6. $y = \frac{1}{x}$, $x = 1$, $x = 3$, $y = 0$ about x-axis

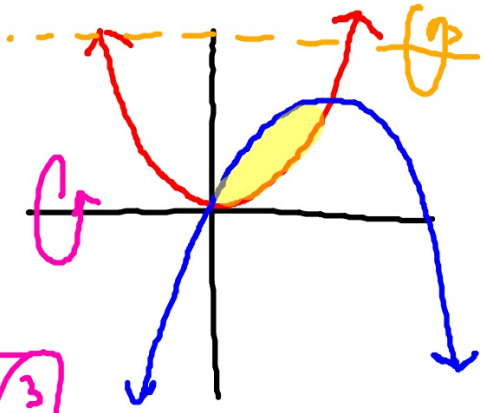


$$\int_1^3 \pi\left(\left(\frac{1}{x}\right)^2 - 0^2\right)dx$$

$2.094u^3$

7. $y = x^2$, $y = 4x - x^2$ about :

a) x - axis b) y = 6



a) $\int_0^2 \pi \left((4x - x^2)^2 - (x^2)^2 \right) dx$

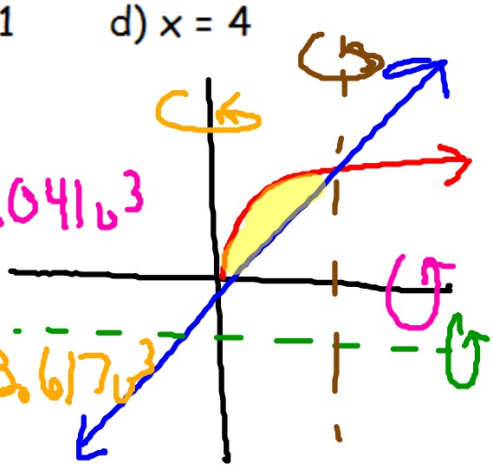
$33.51 u^3$

b) $\int_0^2 \pi \left((6 - x^2)^2 - \left(6 - (4x - x^2)\right)^2 \right) dx$

$67.021 u^3$

8. $y = 4\sqrt{x}$, $y = 2x$, about :

a) x - axis b) y - axis c) y = -1 d) x = 4



a) $\int_0^4 \pi\left((4\sqrt{x})^2 - (2x)^2\right)dx = 134.041\text{u}^3$

b) $\int_0^8 \pi\left(\left(\frac{1}{2}y\right)^2 - \left(\frac{y^2}{16}\right)^2\right)dy = 53.617\text{u}^3$

c) $\int_0^4 \pi\left((4\sqrt{x}-1)^2 - (2x-1)^2\right)dx = 167.552\text{u}^3$

d) $\int_0^8 \pi\left(\left(4-\frac{y^2}{16}\right) - \left(4-\frac{1}{2}y\right)^2\right)dy = 80.425\text{u}^3$