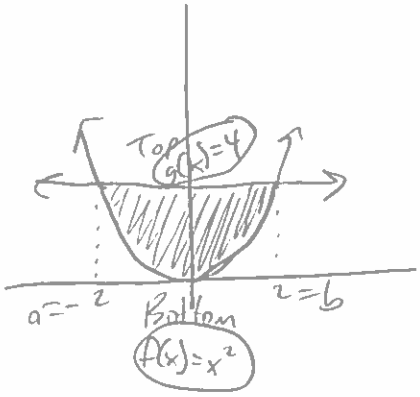
(7) Find the area between the curves $y = x^2$, $y = 4$.



$$A = \int_a^b [g(x) - f(x)]\,dx$$

$$= \int_{-2}^{2} [(4) - (x^2)]\,dx$$

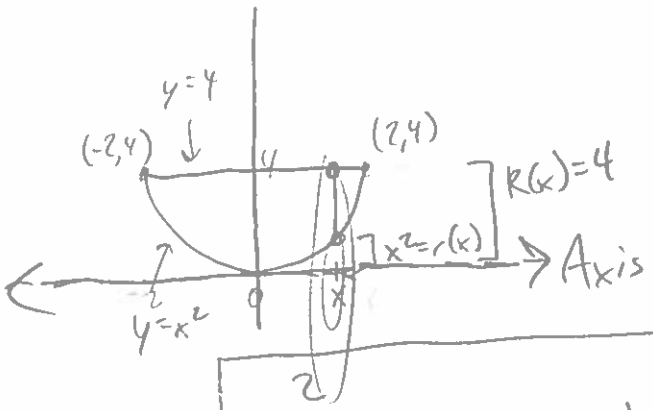
$$= \left[4x - \frac{1}{3}x^3\right]_{-2}^{2}$$

$$= \left(8 - \frac{8}{3}\right) - \left(-8 + \frac{8}{3}\right)$$

$$= 16/3 + +16/3$$

$$= \boxed{32/3}$$

(8) What integral is produced by the washer method for the volume of the solid of revolution obtained by rotating the region bounded by $y=x^2$ and $y=4$ around the x-axis?



$$V = \pi \int_{-2}^{2} \left((4)^2 - (x^2)^2 \right) dx$$

$$= \pi \int_{-2}^{2} \left(16 - x^4 \right) dx$$

$$= \pi \left[16x - \frac{1}{5}x^5 \right]_{-2}^{2}$$

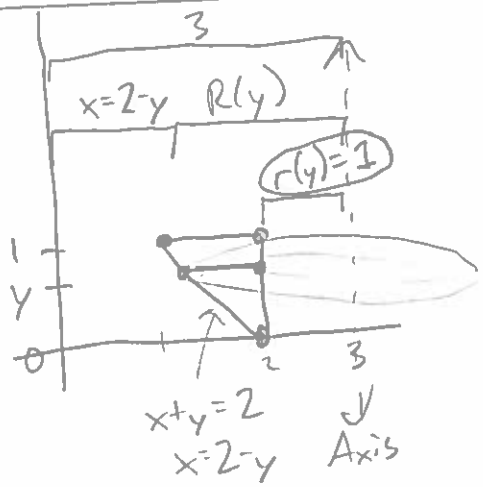
$$= \pi \left[\left(32 - \frac{32}{5} \right) - \left(-32 + \frac{32}{5} \right) \right]$$

$$= \pi \frac{160 - 32 + 160 - 32}{5}$$

$$= \frac{256\pi}{5}$$

11
380
−64
156

(9) What integral is produced by the washer method for the volume of the solid of revolution obtained by rotating the triangle with vertices $(1,1), (2,1), (2,0)$ around the axis $x = 3$?



$3 = (2-y) + R(y)$

$R(y) = 1+y$

$$V = \pi \int_0^1 \left((1+y)^2 - (1)^2 \right) dy$$

$$= \pi \int_0^1 \left((1 + 2y + y^2) - 1 \right) dy$$

$$= \pi \left[y^2 + \frac{1}{3} y^3 \right]_0^1$$

$$= \pi \left[\left(1 + \frac{1}{3}\right) - (0+0) \right] = \frac{4}{3}\pi$$