

$$= \pi \int_0^5 x^2 (x-5)^4 dx \quad (5)$$

(I hope you can do this on your calc.)

Sub $u = x - 5$ then $x = u + 5$
and $du = dx$

$$V = \pi \int_{-5}^0 (u+5)^2 u^4 du$$

$$= \pi \int_{-5}^0 u^6 + 10u^5 + 25u^4 du$$

$$= \pi \left[\frac{u^7}{7} + \frac{10u^6}{6} + \frac{25u^5}{5} \right]_{-5}^0$$

$$= \pi(0) - \pi \left(\frac{(-5)^7}{7} + \frac{10(-5)^6}{6} + \frac{25(-5)^5}{5} \right)$$

$$= 744.05\pi$$

$$c) \frac{625}{12} = \int_0^a x(a-x) dx$$

$$= \int_0^a ax - x^2 dx = \left[\frac{ax^2}{2} - \frac{x^3}{3} \right]_0^a$$

$$\frac{625}{12} = \frac{a^2}{2} - \frac{a^3}{3} = \frac{a^3}{6}$$