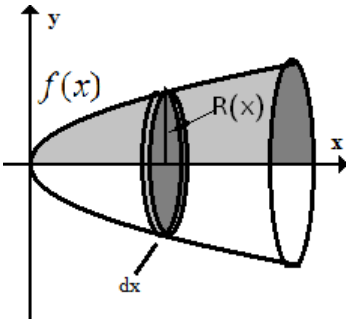
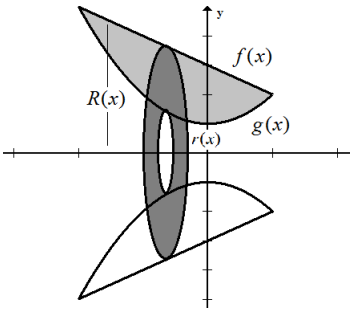
Solids of Revolution

Disk Method - in terms of x



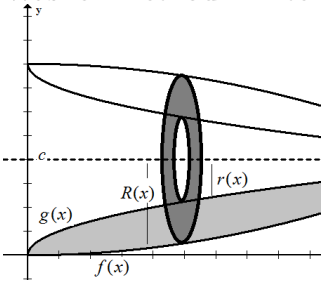
$$V = \int_a^b \pi R(x)^2 \, dx$$

Washer Method - in terms of x



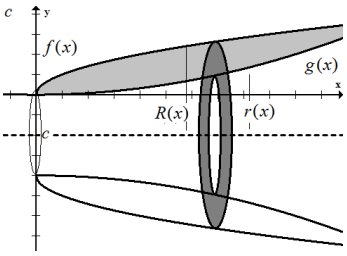
$$V = \int_a^b \pi R(x)^2 - \pi r(x)^2 \, dx$$
$$R(x) = f(x), \;\; r(x) = g(x)$$

Washer Method - in terms of x



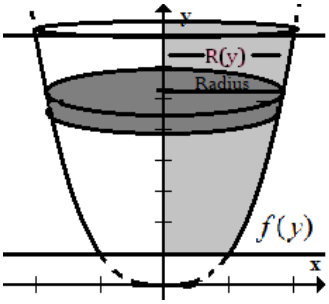
$$V = \int_a^b \pi R(x)^2 - \pi r(x)^2 \, dx$$
$$R(x) = c - f(x), \;\; r(x) = c - g(x)$$

Washer Method - in terms of x



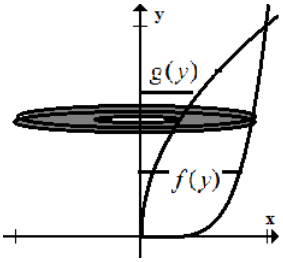
$$V = \int_a^b \pi R(x)^2 - \pi r(x)^2 \, dx$$
$$R(x) = c + f(x), \;\; r(x) = c + g(x)$$

Disk Method - in terms of y



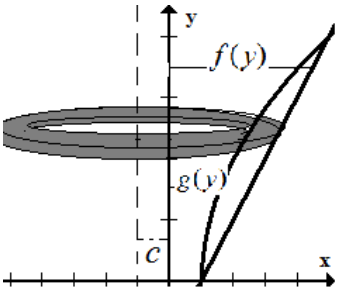
$$V = \int_c^d \pi R(y)^2 \, dy$$
$$R(y) = f(y)$$

Washer Method - in terms of y



$$V = \int_c^d \pi R(y)^2 - \pi r(y)^2 \, dy$$
$$R(y) = f(y), \;\; r(y) = g(y)$$

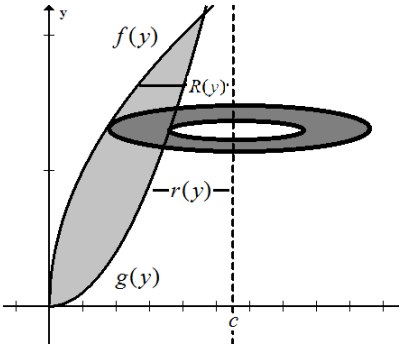
Washer Method - in terms of y



$$V = \int_c^d \pi R(y)^2 - \pi r(y)^2 \, dy$$

$$R(y) = c + f(y), \;\; r(y) = c + g(y)$$

Washer Method - in terms of y

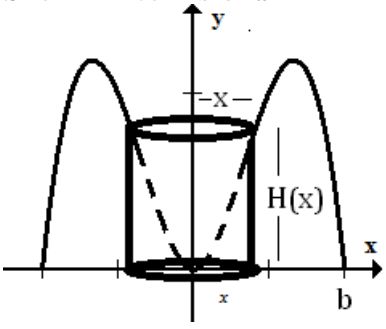


$$V = \int_c^d \pi R(y)^2 - \pi r(y)^2 \, dy$$

$$R(y) = c - f(y), \;\; r(y) = c - g(y)$$

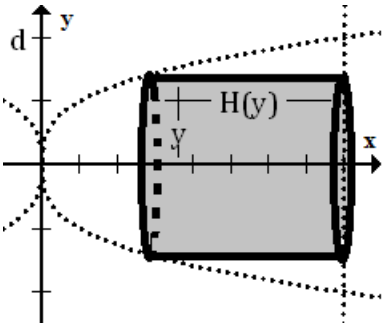
Shell Method

Shell - in terms of x



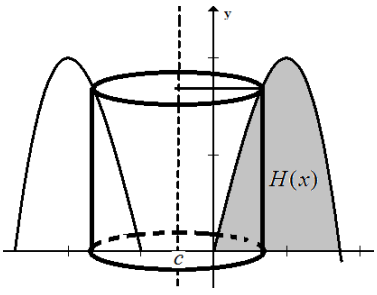
$$V = \int_a^b 2\pi x H(x) \, dx$$

Shell - in terms of y



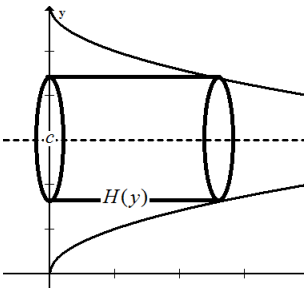
$$V = \int_c^d 2\pi y H(y) \, dy$$

Shell - in terms of x



$$V = \int_a^b 2\pi (x + c) H(x) \, dx$$

Shell - in terms of y



$$V = \int_c^d 2\pi (c - y) H(y) \, dy$$