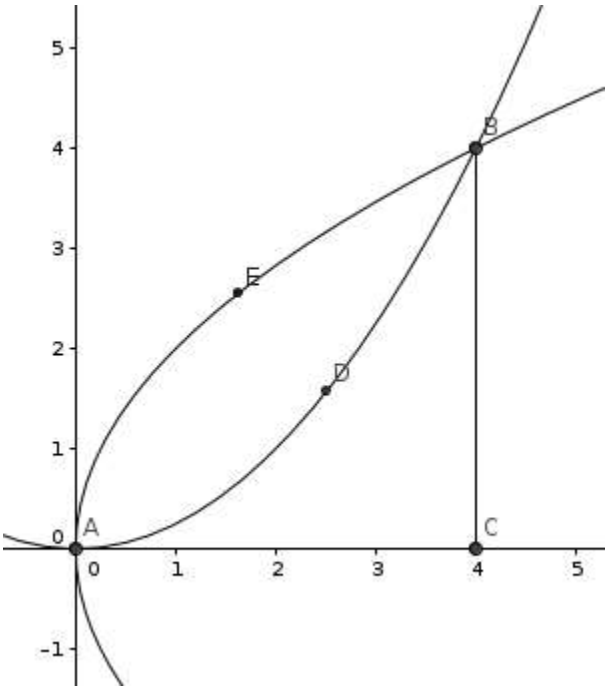
Application Of Integrals

Que 1: $Find\ area\ bouded\ by\ the\ parabolas\ y^2 = 4ax\ and\ x^2 = 4ay$

Marks :(6)

Ans:



$Here\ intersection\ points\ are (0,0)\ and\ (4a,4a)$

$Required\ area = Area\ AEBC - AreaADBC$

$$= \int_0^{4a} (\sqrt{4ax} - \frac{x^2}{4a} dx) = \frac{16a^2}{3}$$

Que 2: $Find\ the\ area\ bounded\ by\ y = 1 + \frac{8}{x^2}\ and\ the\ ordinates\ x = 2\ and\ x = 4$

Marks :(2)

Ans:

$$Area = \int_2^4 y dx = \int_2^4 (1 + \frac{8}{x^2}) dx$$

$$= \left[x - \frac{8}{x}\right]_2^4 = 4$$