Summary of key points

1 The volume of revolution formed when $y = f(x)$ is rotated through 2π radians about the x-axis between $x = a$ and $x = b$ is given by

$$\textbf{Volume} = \pi \int_a^b y^2 \, \mathrm{d}x$$

2 The volume of revolution formed when $x = f(y)$ is rotated through 2π radians about the y-axis between $y = a$ and $y = b$ is given by

$$\textbf{Volume} = \pi \int_a^b x^2 \, \mathrm{d}y$$

- The volume of revolution formed when the parametric curve with equations $x = f(t)$ and $y = g(t)$ is rotated through 2π radians about the x-axis between $x = a$ and $x = b$ is given by

$$\textbf{Volume} = \pi \int_{x=a}^{x=b} y^2 \, \mathrm{d}x = \pi \int_{t=q}^{t=p} y^2 \frac{\mathrm{d}x}{\mathrm{d}t} \mathrm{d}t$$

- The volume of revolution formed by rotating the same curve through 2π radians about the y-axis between $y = a$ and $y = b$ is given by

$$\textbf{Volume} = \pi \int_{y=a}^{y=b} x^2 \, \mathrm{d}y = \pi \int_{t=q}^{t=p} x^2 \frac{\mathrm{d}y}{\mathrm{d}t} \mathrm{d}t$$