

1. Find the area bounded by the given curves.

(a) $y = x^2$ and $y = 2x - x^2$

(b) $y = 2x$ and $y = x^2 - 4x$

(c) $y = 3x^2, y = x^2 + 4$

(d) $y = \sin(x), y = \cos(x), x = 0,$ and $x = \pi/2$ (Be careful!)

(e) $y = x - 1$ and $y^2 = 2x + 6$ (Read the problem carefully!)

(f) $y = 1/x, y = 1/x^2, x = 2.$

(g) $y = 5 \cos x, \quad y = 5 - \frac{10x}{\pi}$

(h) $y = 36 - x^2$ and $y = x^2 - 36$

2. Find the volume of the solid obtained by rotating the region bounded by the given curves about the specified line.

(a) $x + 2y = 2, x = 0, y = 0;$ about the x-axis

(b) $y = 3x^4, x = 1, x = -1, y = 0;$ about the x-axis

(c) $y = 3x^4, x = 1, y = 0;$ about the y-axis

(d) $y = 3x^4, x = 1, x = 0, y = 0;$ about $x = 1$

(e) $y = 3x^4, x = 1, x = 0, y = 0;$ about $y = 3$

(f) $y^2 = 4x, y = x;$ about the x-axis

(g) $y^2 = 4x, y = x;$ about the y-axis

(h) $y^2 = 4x, y = x;$ about $x = 4$

(i) $y^2 = 4x, y = x;$ about $y = 4$

(j) $x = e^{y^2}, y = 0, x = 0, y = 1;$ about the x-axis

(k) $y = \sin(x), x = 0, x = \pi, y = 2;$ about $y = 2$