

Name: _____

Find the area bounded by $y = x^2 + 3$ and $y = 7$.

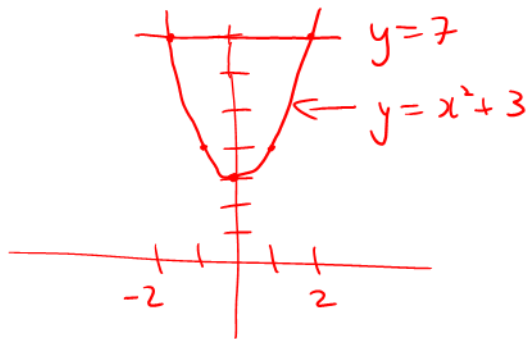
Intersection

$$y = y$$

$$x^2 + 3 = 7$$

$$x^2 = 4$$

$$x = \pm 2$$



$$\begin{aligned} A &= \int_a^b (y_t - y_b) dx \\ &= \int_{-2}^2 [7 - (x^2 + 3)] dx \\ &= \int_{-2}^2 (4 - x^2) dx \\ &= \left[4x - \frac{x^3}{3} \right]_{-2}^2 \\ &= 8 - \frac{8}{3} - \left(-8 + \frac{8}{3} \right) \\ &= \frac{32}{3} \end{aligned}$$