

6.7 Area Under the Curve Worksheet

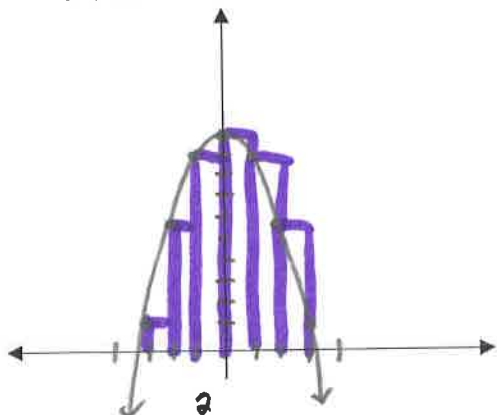
Name: Key

1.) Given: $y = -x^2 + 10$ $[-3, 3]$, $n = 6$

$$\Delta x = \frac{3 - (-3)}{6} = 1 \quad \sum_{-3}^3 (-x^2 + 10) \Delta x$$

x	-3	-2	-1	0	1	2	3
f(x)	1	6	9	10	9	6	1

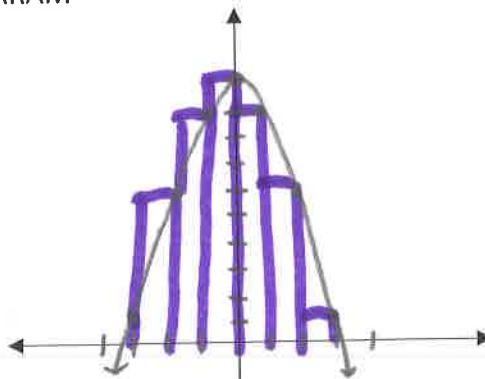
LRAM



$$\text{LRAM} = \sum_{-3}^2 (-x^2 + 10) \cdot (1)$$

$$\begin{aligned} &= 1 \cdot f(-3) + 1 \cdot f(-2) + 1 \cdot f(-1) + 1 \cdot f(0) + 1 \cdot f(1) + 1 \cdot f(2) \\ &= 1 + 6 + 9 + 10 + 9 + 6 \\ &= \boxed{41 \text{ u}^2} \end{aligned}$$

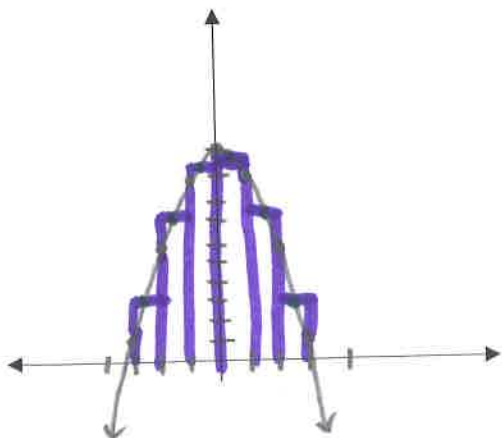
RRAM



$$\text{RRAM} = \sum_{-2}^3 (-x^2 + 10) \cdot (1)$$

$$\begin{aligned} &= 1 \cdot f(-2) + 1 \cdot f(-1) + 1 \cdot f(0) + 1 \cdot f(1) + 1 \cdot f(2) + 1 \cdot f(3) \\ &= 6 + 9 + 10 + 9 + 6 + 1 \\ &= \boxed{41 \text{ u}^2} \end{aligned}$$

MRAM



$$\text{MRAM} = \sum_{-2.5}^{2.5} (-x^2 + 10) (1)$$

$$\begin{aligned} &= 1 \cdot f(-2.5) + 1 \cdot f(-1.5) + 1 \cdot f(-0.5) + 1 \cdot f(0.5) + 1 \cdot f(1.5) + 1 \cdot f(2.5) \\ &= 3.75 + 7.75 + 9.75 + 9.75 + 7.75 + 3.75 \\ &= \boxed{47.5 \text{ u}^2} \end{aligned}$$