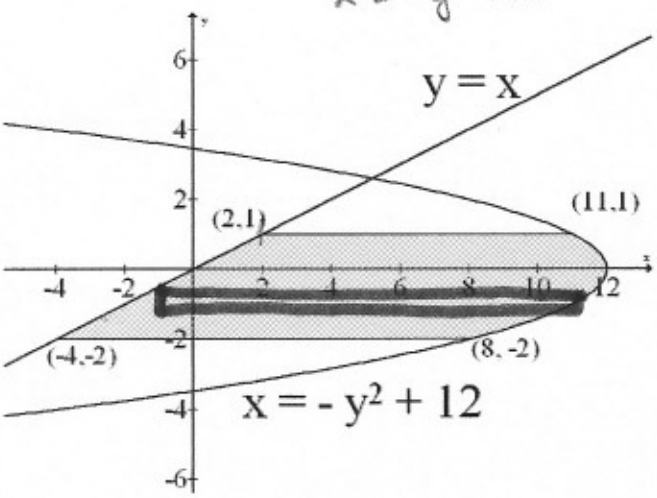
Set up an integral for the total area of the following regions:

1. Use dy

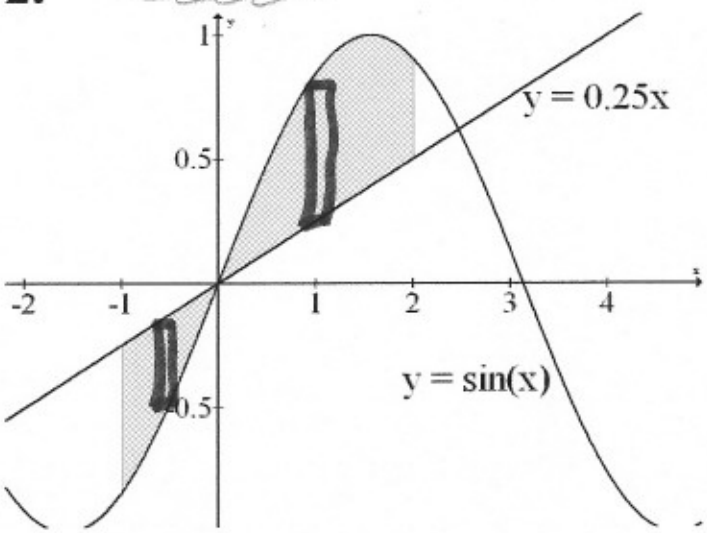
$x = y$

$x = -y^2 + 12$



$$\text{AREA} = \int_{-2}^{1} (-y^2+12) - y \, dy$$

2. Use dx

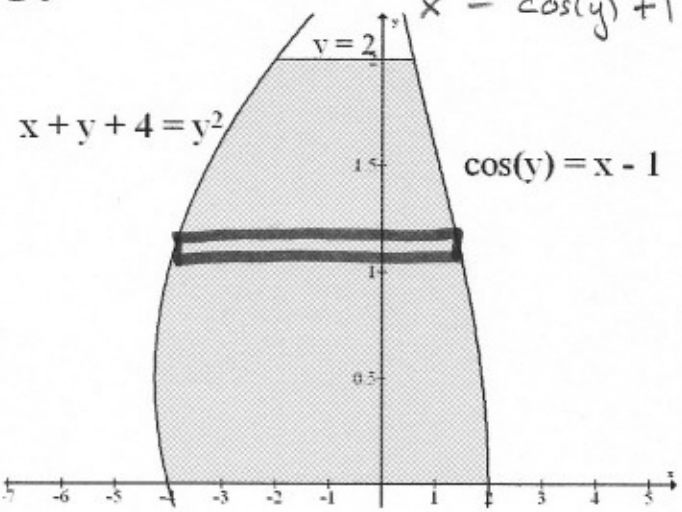


$$\text{AREA} = \int_{-1}^{0} (0.25x) - (\sin(x)) \, dx + \int_{0}^{2} (\sin(x)) - (0.25x) \, dx$$

3. Use dy

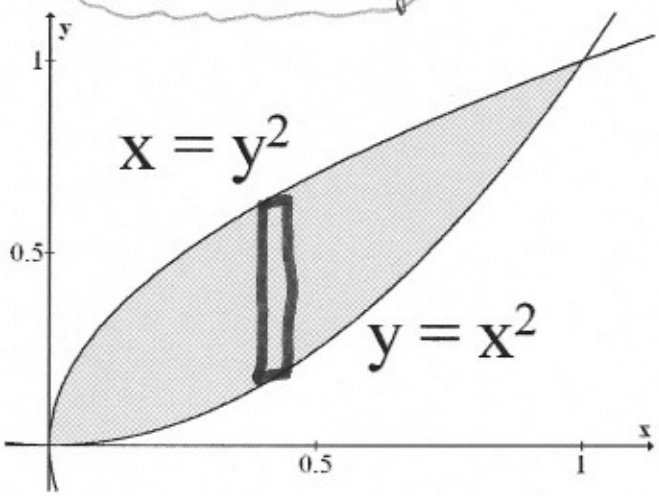
$x = y^2 - y - 4$

$x = \cos(y) + 1$



$$\text{AREA} = \int_{0}^{2} (\cos(y)+1) - (y^2-y-4) \, dy$$

4. Use dx or dy



with dx : $y = \sqrt{x}$, $y = x^2$

$$\text{AREA} = \int_{0}^{1} \sqrt{x} - x^2 \, dx$$

with dy : $x = y^2$, $x = \sqrt{y}$

$$\text{AREA} = \int_{0}^{1} \sqrt{y} - y^2 \, dy$$