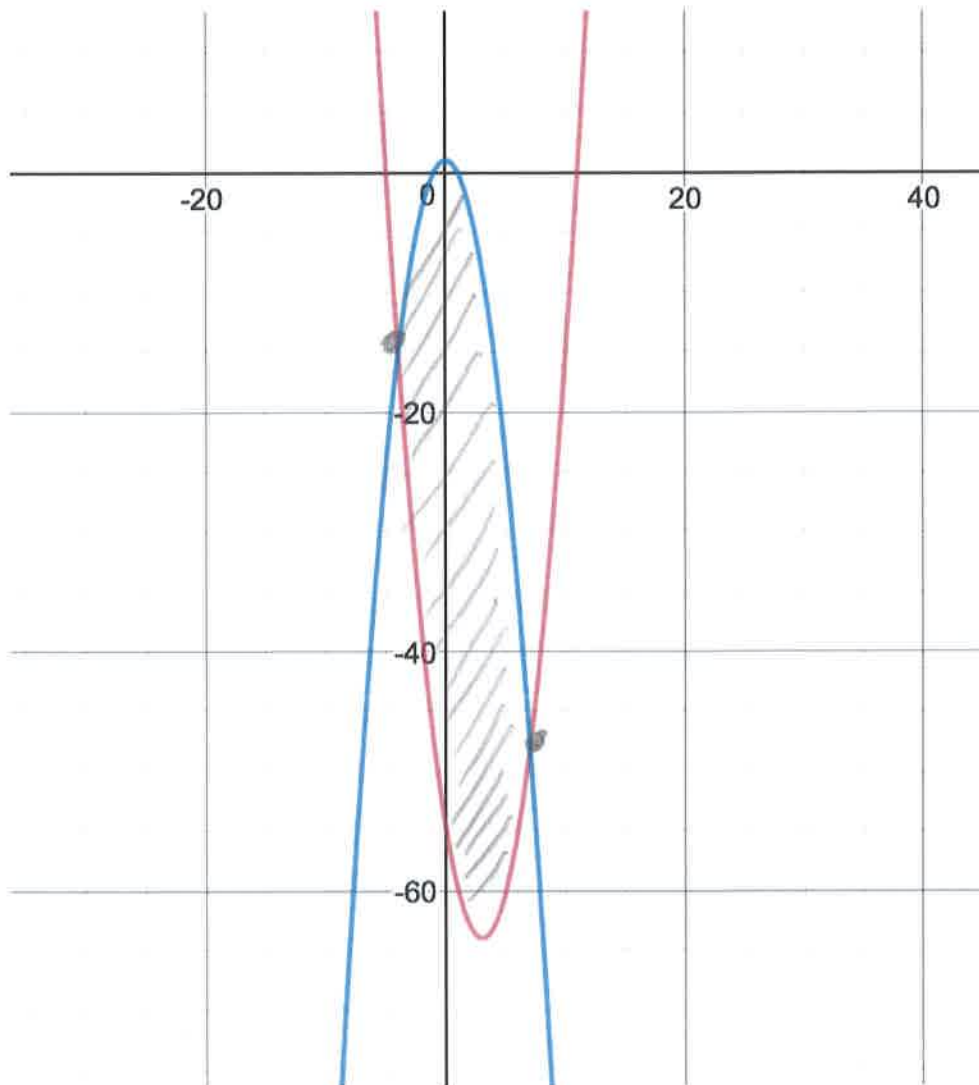Find the area of the region bounded by the graphs of the given equations.

$y = x^2 - 6x - 55$, $y = 1 - x^2$

Online Graphing Calculator: https://www.desmos.com/calculator

where do the curves intersect?

$x^2 - 6x - 55 = 1 - x^2$, $2x^2 - 6x - 56 = 0$

$x^2 - 3x - 28 = 0$, $(x-7)(x+4) = 0$

$$x = -4, \quad x = 7$$

$$\int_{-4}^{7} \left[(1-x^2) - (x^2-6x-55) \right] dx$$

$$= \int_{-4}^{7} (-2x^2 + 6x + 56) \, dx$$

$$= \left(-\frac{2x^3}{3} + 3x^2 + 56x \right) \Big|_{-4}^{7} = 901$$