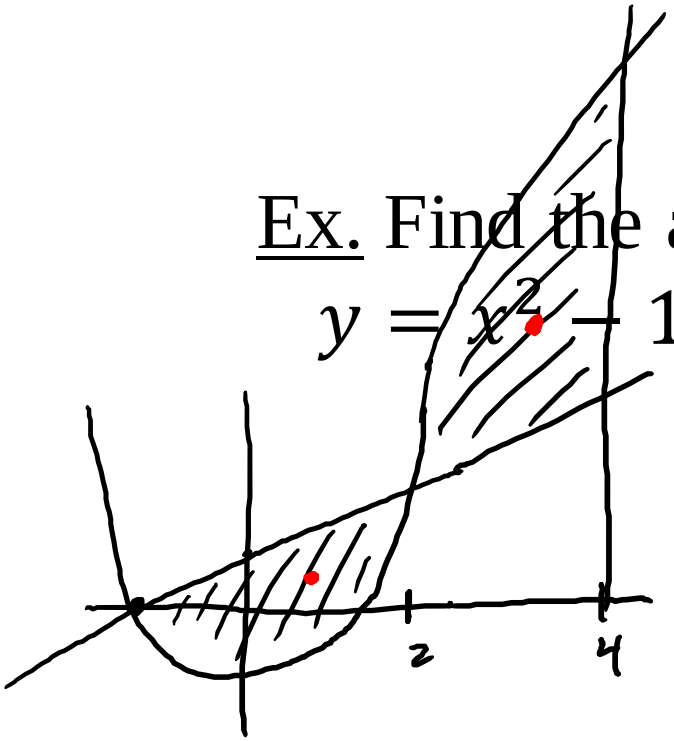
More Areas

Ex. Find the area of the region bounded by $y = x^2 - 1$, $y = x + 1$, and $x = 4$.



$$A = \int_{-1}^{2} (x+1) - (x^2-1)\,dx + \int_{2}^{4} (x^2-1) - (x+1)\,dx$$

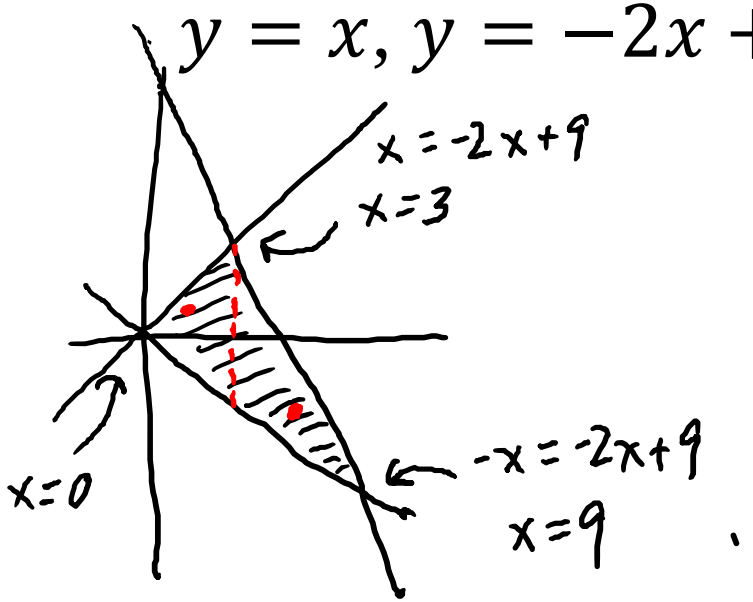
$x^2 - 1 = x + 1$

$x^2 - x - 2 = 0$

$(x-2)(x+1) = 0$

$x = 2 \quad x = -1$

Ex. Find the area of the region bounded by $y = x$, $y = -2x + 9$, and $y = -x$.



$$A = \int_0^3 x - (-x)\,dx + \int_3^9 (-2x+9) - (-x)\,dx$$