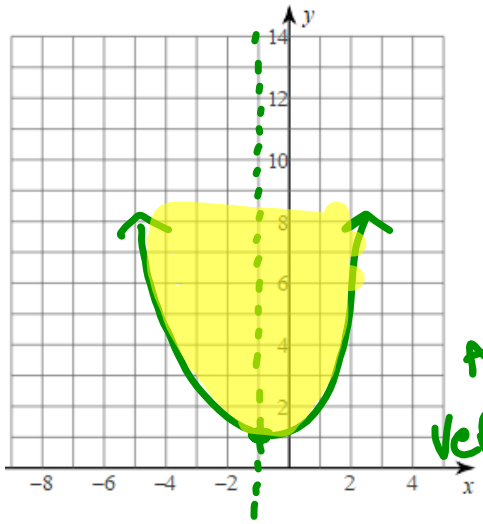
Quadratics Inequalities and Inverses

1\7

$y \geq 3x^2 + 6x + 4$



$\geq, \leq$ solid

$>, <$ dotted.

Shade

$\leq, <$ below

$\geq, >$ above

AOS $x = \frac{-b}{2a} = \frac{-6}{2(3)} = \frac{-6}{6} = -1$

Vertex $(-1, 1)$

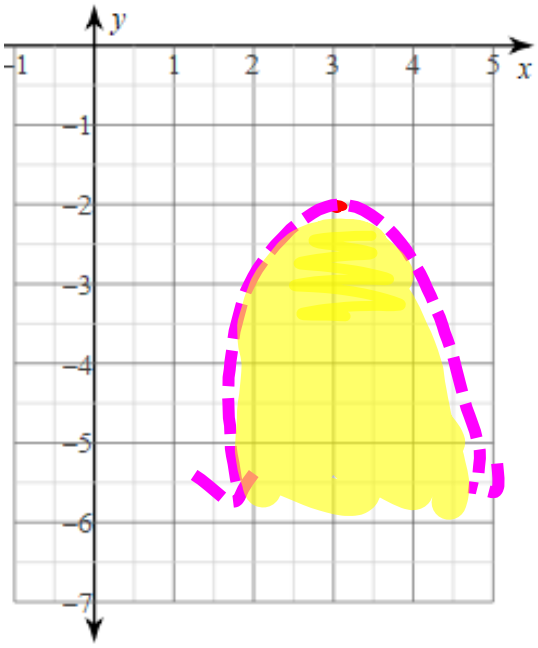
$3(-1)^2 + 6(-1) + 4$

$3 - 6 + 4$

$-3 + 4$

1

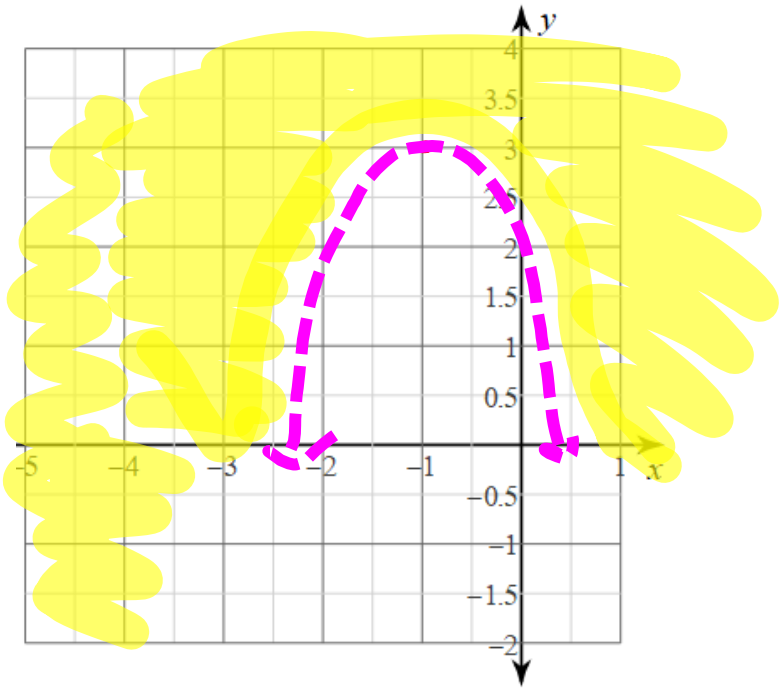
$y < -x^2 + 6x - 11$



< dotted

Shade below

$y \geq -x^2 - 2x + 2$



Find the inverse of the quadratic.

$$3r^2 = 2 + 6r$$

① Standard form

$3x^2 - 6x - 2 = y$

② Switch x & y

$3y^2 - 6y - 2 = x$

③ Solve for y by completing the square

$3y^2 - 6y = x + 2$

$3(y^2 - 2y + 1) = x + 2 + 3$

$3(y-1)^2 = x + 5$

$\sqrt{(y-1)^2} = \sqrt{\frac{x+5}{3}}$

$y - 1 = \pm\sqrt{\frac{x+5}{3}}$

$y = 1 \pm \sqrt{\frac{x+5}{3}}$

x^2 ↻

$-x^2$ ↺

$f^{-1}(x)$

$$11p^2 = -p + 7$$

$$3v^2 = 11v - 7$$