5-7 Quadratic Inequalities

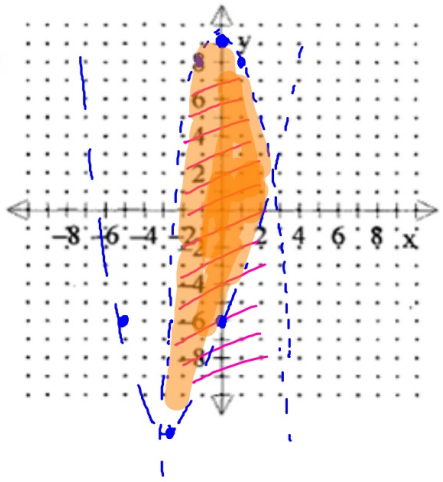
Ex. 1 Graph the system of inequalities

$y < -x^2 + 9$

$y > x^2 + 5x - 6$

$y = -x^2 + 9$ $\quad$ $y = x^2 + 5x - 6$

$V(0, 9)$ $\quad$ $V(-2.5, -12.25)$



Ex. 2 Solve the inequalities:

a) $2x^2 - x > 3$

$x < -1$ OR $x > \frac{3}{2}$

$2x^2 - x - 3 = 0$

$(2x - 3)(x + 1) = 0$

$x = \frac{3}{2}, -1$

T F T

-1 0 $\frac{3}{2}$

$x = -2$: $8 + 2 > 3$ T

$x = 0$: $0 > 3$ F

$x = 2$ $8 - 2 > 3$

b) $3x^3 + 11x^2 - 4x \leq 0$

$x \leq -4$ OR $0 \leq x \leq \frac{1}{3}$

$x(3x^2 + 11x - 4) \leq 0$

$x(3x - 1)(x + 4) \leq 0$

$x = 0, \frac{1}{3}, -4$

T F T F

-4 0 $\frac{1}{3}$

$x = -5$: $-80 \leq 0$ T

$x = +1$: $3 + 11 - 4 \not\leq 0$ F

$x = .1$: $.003 + .11 - .4 \leq 0$ T

$x = -1$: $-3 + 11 + 4 \leq 0$