

MATH 2A/5A Prep: Quadratic Functions

Facts to Know:

1. Solving quadratic equations:

(general) • Solutions to $ax^2 + bx + c = 0$ are:

discriminant: $\Delta = b^2 - 4ac$

If $\Delta \geq 0$, then $x = \frac{-b \pm \sqrt{\Delta}}{2a}$

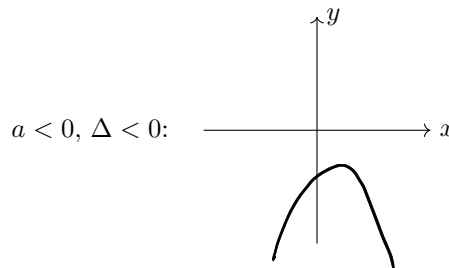
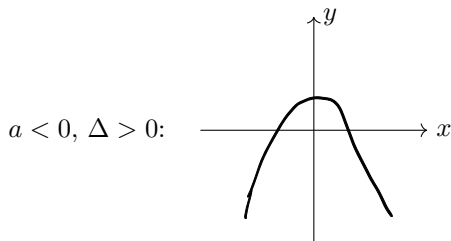
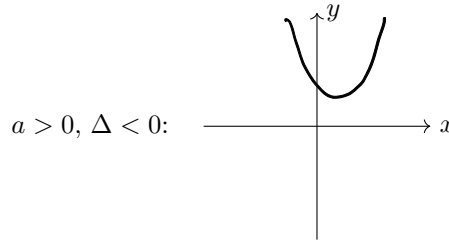
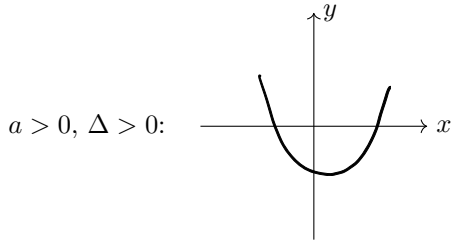
If $\Delta < 0$, then no solution.

(special case) • The cross-multiplication method:

$$\begin{array}{r} x^2 + x - 2 \\ \hline \Delta \hline \end{array} = (x+2)(x-1)$$

$$\begin{array}{r} x \quad +2 \\ x \quad -1 \\ \hline -x + 2x = x \end{array}$$

2. Graph of the parabola $y = ax^2 + bx + c$:



Examples:

1. Find the intersection of the parabola $y = x^2 + 3x + 1$ with the line $y = x + 2$.

2. Solve the equation $x^2 + x - 6 = 0$.