Cheat Sheet Example

Solve the equation $0 = 36x^2 - 1$

this a binomial with degree 2 and a leading coefficient of 36

Getting x alone

$0 = 36x^2 - 1$

$+1 \quad +1$

$1 = 36x^2$

$\div 36 \quad \div 36$

$\frac{1}{36} = x^2$

$\pm\sqrt{\frac{1}{36}} = x$

$\pm\frac{1}{6} = x$

Factoring

$0 = (6x+1)(6x-1)$

So...

$0 = 6x+1$ OR $0 = 6x-1$

$-1 = 6x$ $\qquad$ $1 = 6x$

$\frac{-1}{6} = x$ $\qquad$ $\frac{1}{6} = x$

If a polynomial has two terms that are both squares, the factored version will have two parentheses with a "+" and "−"

This is called the "zero product law"

this quadratic has two zeros. So it crosses the x-axis twice.

Calculator

① Put $36x^2-1$ into "y="

② Press 2nd → Graph

③ Table:

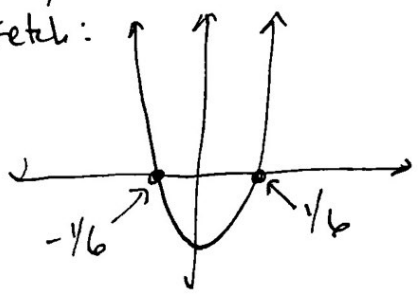
x	y
−2	143
−1	35
0	−1
1	35
2	143

the y-value is 0 when x is between −1 and 0 and when x is between 0 and 1. This matches the fact that $x = \pm 1/6$ solves the equation $0 = 36x^2 - 1$

Desmos

① Put $y = 36x^2 - 1$ into Desmos

② Sketch:



This also matches our findings above