1.2 Discriminant

8/28/19

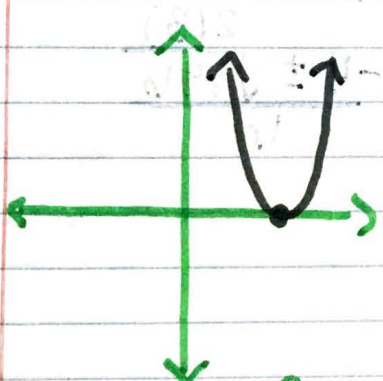
Recall: Quadratic Formula $x = \frac{-b \pm \sqrt{b^2-4ac}}{2a}$ Standard Form $y = ax^2+bx+c$

roots = solutions = zeros = x-intercepts

Discriminant: $D = b^2-4ac$ this tells us how many solutions the function has.

$b^2-4ac = 0$

1 real root



ex: $9x^2-12x+4=0$

$a=9 \quad b=-12 \quad c=4$

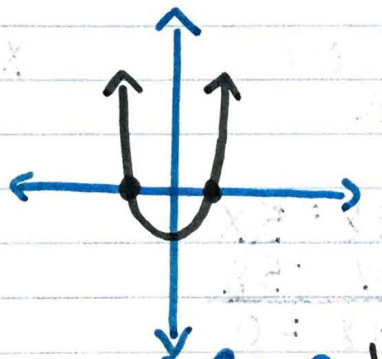
b^2-4ac

$D = (-12)^2-4(9)(4) = 0$

1 real root

b^2-4ac is positive

2 real roots



$x^2+3x+2=3$

$-3 \quad -3$

$x^2+3x-1=0$

$a=1 \quad b=3 \quad c=-1$

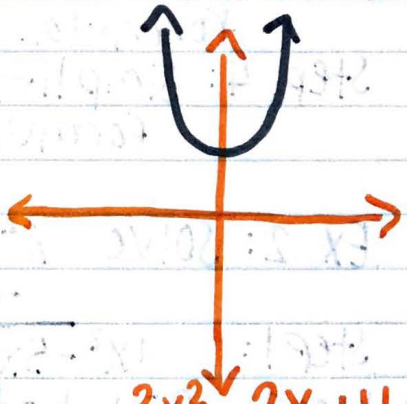
$D = (3)^2-4(1)(-1)$

$D = 13$

2 real roots

b^2-4ac is negative

no real roots



$3x^2-2x+4=0$

$a=3 \quad b=-2 \quad c=4$

$D = (-2)^2-4(3)(4)$

$D = -44$

no real roots