

Useful Math

Yannik Keller

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Abstract

Here I will write down all the useful math, I don't want to forget.

1 The better quadratic formula

Quadratic equation of the form

$$x^2 + bx + c = 0 \tag{1}$$

Get midpoint m between the 2 zero crossings and the distance d between the midpoint and the zero crossings.

$$\begin{aligned} m &= \frac{b}{2} \\ d &= \sqrt{m^2 - c} \end{aligned} \tag{2}$$

Recover solutions:

$$\begin{aligned} x^{(1)} &= m + d \\ x^{(2)} &= m - d \end{aligned} \tag{3}$$

Reference: <https://www.youtube.com/watch?v=MHXO86wKeDY>