

Formulas

- Arithmetic sequences and series:

$$a_n = a_1 + (n - 1)d \text{ and } S_n = n \left(\frac{a_1 + a_n}{2} \right).$$

- Geometric sequences and series:

$$a_n = a_1(r)^{n-1} \text{ and } S_n = a_1 \left(\frac{1 - r^n}{1 - r} \right), \text{ and}$$

$$\text{for } n \rightarrow \infty \text{ with } |r| < 1, S = a_1 \left(\frac{1}{1 - r} \right).$$

- Quadratic Formula:

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}.$$

- Cramer's Method:

$$x = D_x / D$$

$$y = D_y / D.$$

- Inverse Matrix:

If $A = \begin{bmatrix} a & b \\ c & d \end{bmatrix}$, then

$$A^{-1} = \frac{1}{|A|} \begin{bmatrix} d & -b \\ -c & a \end{bmatrix}.$$