Finding Roots

$$z^n + a = 0 \Rightarrow z^n = -a = |a| e^{j(2k+1)\pi}$$

$$z_k = |a|^{(1/n)} e^{j((2k+1)\pi)/n} \quad \text{where } k = 0, 1, 2$$

Polar + Rectangular

$$|\vec{z}| = \sqrt{x^2 + y^2}$$

$$zv = (x_p - y_q) + j(x_q + y_p)$$

For Accelerometer

$$a_0 = \frac{Vcc}{2} \qquad \text{sensitivity} = \frac{Vcc}{a_{swing}} \left[\frac{V}{g}\right]$$

$$a_x = a_0 + s\cos\theta \qquad \theta = a\tan^{-1}\left(\frac{a_x}{a_y}\right)$$

$$a_y = a_0 - s\sin\theta \qquad a = \frac{V_x - V_{eq}}{s}$$

OR $\quad a = a_0 + sg$

Geometric Series

$$\sum_{k=1}^{n} a_k r^k = a \cdot \frac{1 - r^n}{1 - r}$$

for inf. : $\frac{1}{1-r}$

Analog

$$V_x = V_0 + \frac{2^n - 1 \text{ bits}}{a_{swing}} \cdot g$$