Introduction to Trigonometry with Applications

APPLICATION EXAMPLE: ANALYSIS FOR ERROR IN POSITIONING OF TIP OF TWO-LINK ROBOT

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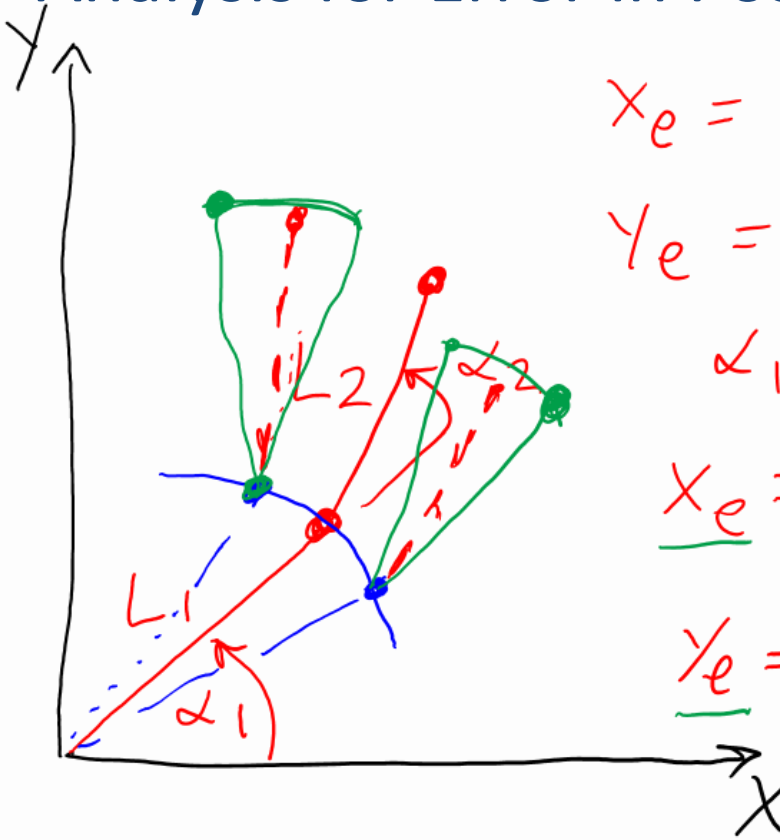
Application Example

Analysis for Error in Positioning of Tip of Two-Link Robot



$$x_e = L_1 \cos(\alpha_1) + L_2 \cos(\alpha_1 + \alpha_2)$$

$$y_e = L_1 \sin(\alpha_1) + L_2 \sin(\alpha_1 + \alpha_2)$$

$\alpha_1 \rightarrow \pm\Delta\alpha \qquad \alpha_2 \rightarrow \pm\Delta\alpha$

$$\underline{x_e} = L_1 \cos(\alpha_1 \pm \Delta\alpha) + L_2 \cos(\alpha_1 \pm \Delta\alpha + \alpha_2 \pm \Delta\alpha)$$

$$\underline{y_e} = L_1 \sin(\alpha_1 \pm \Delta\alpha) + L_2 \sin(\alpha_1 \pm \Delta\alpha + \alpha_2 \pm \Delta\alpha)$$

L_1 & L_2	α_1	α_2	$\Delta\alpha$
50 mm, 40 mm	30°	45°	1°