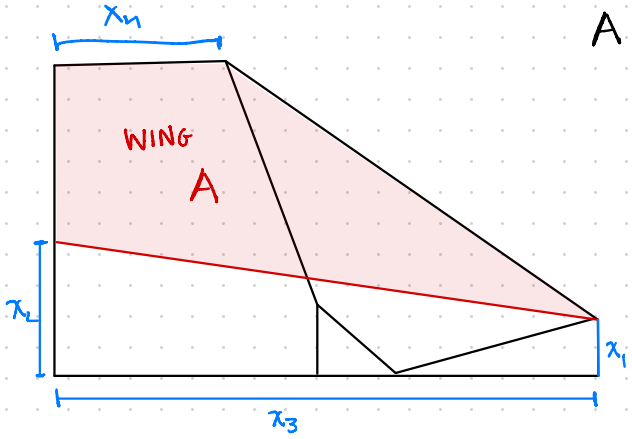
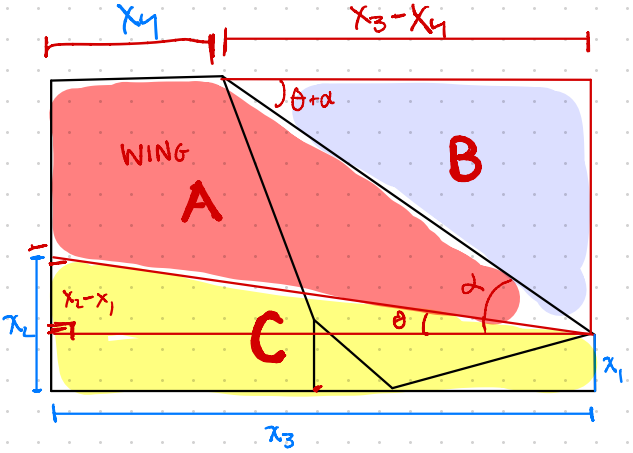


A = wing area

=



$$4.25 = \frac{W}{2} = \frac{8.5''}{2}$$

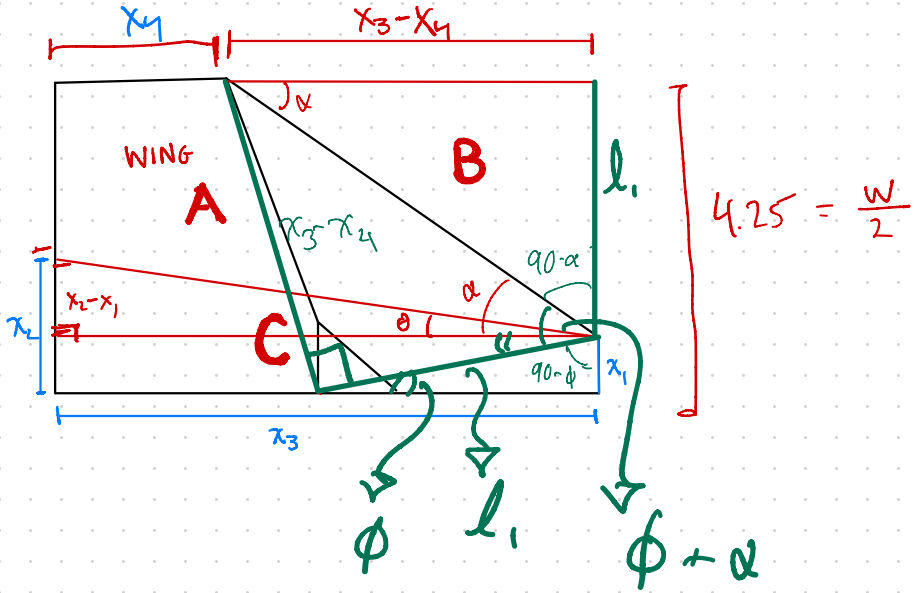
$$B = \frac{1}{2}(4.25 - x_1)(x_3 - x_4)$$

$$C = x_3\left(\frac{x_1 + x_2}{2}\right)$$

$$A + B + C = 4.25 x_3$$

$$A = \frac{W}{2} x_3 - B - C$$

$$A = \frac{W}{2} x_3 - \frac{1}{2}\left(\frac{W}{2} - x_1\right)(x_3 - x_4) - x_3\left(\frac{x_1 + x_2}{2}\right)$$



(1) $\dfrac{x_3 - x_4}{l_1} = \tan(\phi + \alpha)$

(2) $\dfrac{l_1}{x_3 - x_4} = \tan(\alpha)$

$$\frac{1}{\tan\alpha} = \tan(\phi + \alpha)$$

$\frac{\cos\alpha}{\sin\alpha} = \frac{\sin(\phi+\alpha)}{\cos(\phi+\alpha)}$

$\cos\alpha \cdot \cos(\phi+\alpha) = \sin\alpha \cdot \sin(\phi+\alpha)$

$l_1 = \frac{W_2}{2} - x_1$

$\phi = \arcsin\left(\frac{x_1}{l_1}\right)$

$\theta = \arctan\left(\frac{x_2 - x_1}{x_3}\right)$

desmos

↳ $\alpha = \frac{\pi}{4} - \frac{1}{2}\phi$

↳ $x_4 = x_3 - \dfrac{l_1}{\tan(\alpha)} = x_3 - \dfrac{\frac{W}{2} - x_1}{\tan\left(\frac{\pi}{4} - \frac{1}{2}\phi\right)}$

moment of inertia = $I = mR^2$

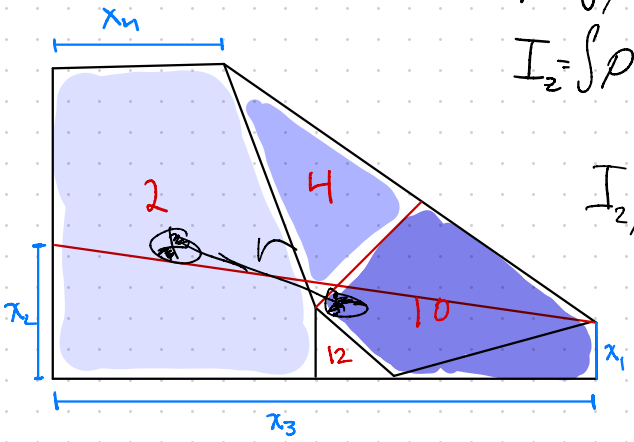
mass — dist btwn axis & rotation mass

① Find center of mass

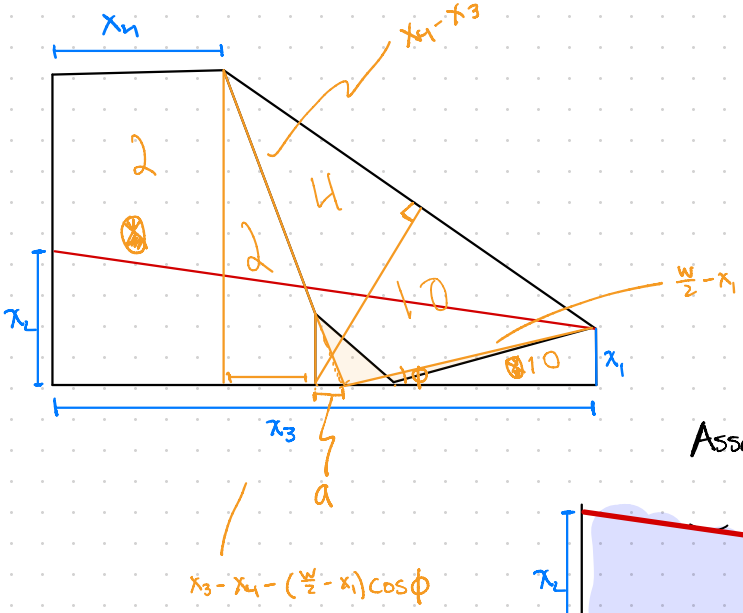
$$m = \int \rho \, dV$$

$$I_z = \int \rho \, |\vec{r} \times \hat{k}| \, dV$$

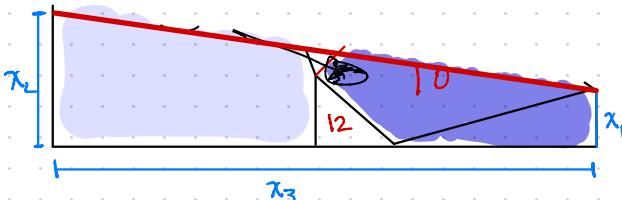
$$I_{2/m} = I_2 + mr^2$$

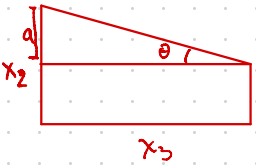


① Find center of mass



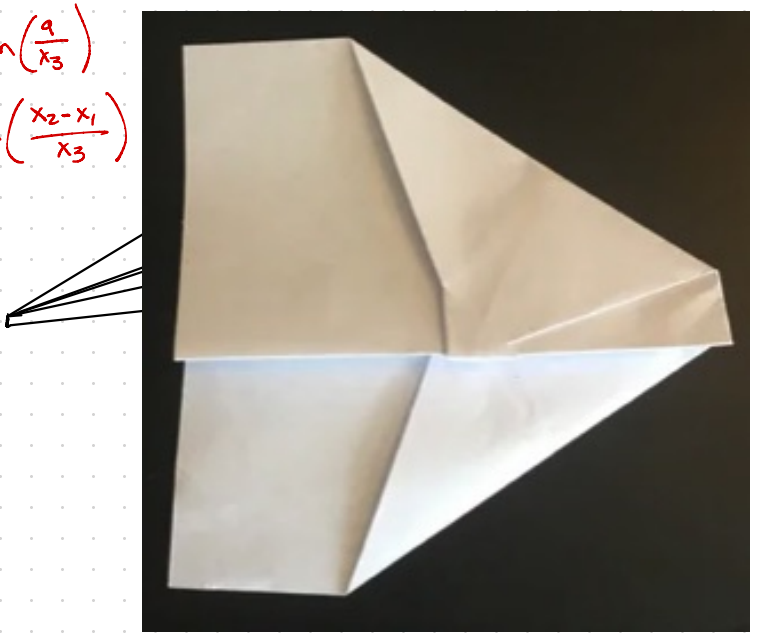
Assume wing flat.

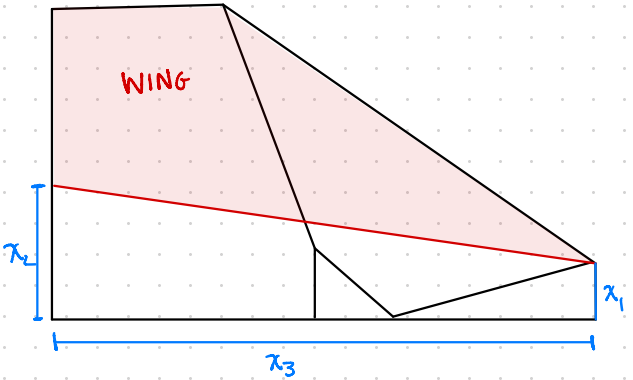


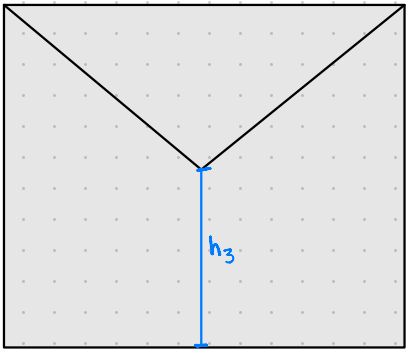


$$\theta = \tan\left(\frac{q}{x_3}\right)$$

$$= \tan\left(\frac{x_2 - x_1}{x_3}\right)$$



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