

Verticale verplaatsing

$$\text{Afstand} = V_0 \times \sin(e) t - \frac{g t^2 \cos A}{2}$$

$$0 = V_0 \times \sin(e) t - \frac{g t^2 \cos A}{2}$$

By landing

$$0 = V_0 \times \sin(e) - \frac{g t \cos A}{2}$$

$$\frac{g t \cos A}{2} = V_0 \sin(e)$$

$$t = \frac{2 V_0 \sin(e)}{g \times \cos A} \quad \text{voor volledig traject}$$

Horizontale verplaatsing

$$\text{Afstand} = V_0 \times \cos(e) t - \frac{g t^2 \sin(A)}{2}$$

A en B samenwerken.

$$\begin{aligned} \text{Af} &= \frac{V_0 \times \cos(e) \times 2 V_0 \sin(e)}{g \times \cos A} - \frac{g \times \sin(A) \times 4 V_0^2 \sin^2(e)}{2 \times g \times \cos^2(A)} \\ &= \frac{V_0^2 \times \cos(e) \times \sin(e) \times 2}{g \times \cos(A)} - \frac{\sin(A) \times 2 \times V_0^2 \times \sin^2(e)}{g \times \cos^2(A)} \\ &= \frac{V_0^2}{g \cos A} \left(\underbrace{2 \cos(e) \sin(e)}_{\sin(2e)} - \frac{\sin(A) \times 2 \times \sin^2(e)}{\cos(A)} \right) \end{aligned}$$

trig eigenschappen voor $2 \times \sin^2(e)$

$$\sin^2(e) = \frac{1 - \cos(2e)}{2}$$

$$2 \sin^2(e) = 1 - \cos(2e) = \sin(2e) \times \tan(e)$$

$$\text{Afstand} = \frac{V_0^2}{g \times \cos(\theta)} \left(\sin(2e) - \tan(A) \times \sin(2e) \times \tan(e) \right)$$

$$\text{Afstand} = \frac{V_0^2 \times \sin(2e)}{g \times \cos(A)} \left(1 - \tan(A) \times \tan(e) \right)$$

(RS) ook wel sec genoemd.

$$\text{Afstand zonder heffing} = \frac{V_0^2 \sin(2e)}{g}$$

(R)

$$\frac{RS}{R} = \frac{V_0^2 \times \sin(2e) (1 - \tan(A) \times \tan(e)) \times \sec(A)}{g}$$

$$\frac{V_0^2 \times \sin(2e)}{g}$$

$$\frac{RS}{R} = (1 - \tan(A) \tan(e)) \times \sec(A)$$

$$RS = R \quad \text{dan}$$

$$1 = 1 - \tan(A) \tan(e) \times \sec(A)$$

$$1 = \frac{1 - \tan(A) \tan(e)}{\cos(A)}$$

$$\cos A = 1 - \cos A \cos e$$

$$\cos(A) \cos(e) = 1 - \cos A$$

$$\tan e = \frac{1 - \cos A}{\sin A} \times \frac{1}{\tan e}$$

$$e = \arctan \left[\frac{1 - \cos A}{\sin A} \right]$$

HOEK WAARBY $R = R_S$

x AC?

x 40° aanpassen tot RS gelijk
wordt aan de afstand onder
je vuur onder hoek 0.

