

$$v_x = 150 \cos 53 = 90'27 \text{ m/s}$$

$$v_y = 150 \sin 53 = 119'79 \text{ m/s}$$

slope eq: $\text{tg } 22 = \frac{y}{x} \rightarrow y = 0'404x$

$$y = mx + n \quad n = 0 \rightarrow y = 0'404x$$

$$x = x_0 + \int_0^t v_x dt = x_0 + (v_0 \cos \alpha) t \Rightarrow t = \frac{x}{150 \cos 53}$$

$$y = y_0 + \int_0^t v_y dt = y_0 + (v_0 \sin \alpha) t - \frac{1}{2} g t^2$$

$$y = 150 \sin 53 \left(\frac{x}{150 \cos 53} \right) - \frac{1}{2} \cdot 10 \cdot \left(\frac{x}{150 \cos 53} \right)^2$$

Now, we equal the eq.

$$150 \sin 53 \left(\frac{x}{150 \cos 53} \right) - \frac{1}{2} \cdot 10 \left(\frac{x}{150 \cos 53} \right)^2 = 0'404x$$

$$x = 1504'48 \text{ m}$$

So we calculate d.

$$d = \frac{x}{\cos 22} ; d = 1622'63 \text{ m}$$

Flight time:

$$t = \frac{x}{v_x} ; t = 17'97 \text{ s}$$

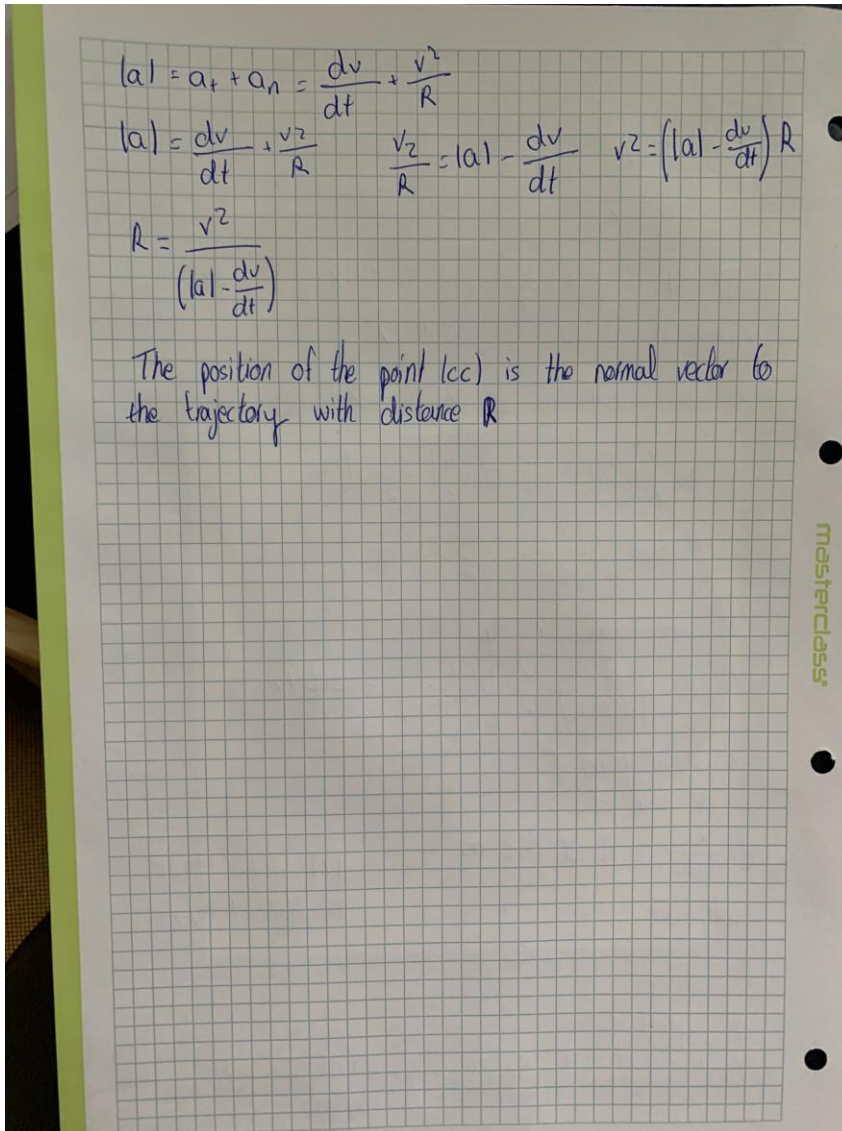
$$|v| = \sqrt{(v_x)^2 + (v_y)^2}$$

$$|v| = 108'34 \text{ m/s}$$

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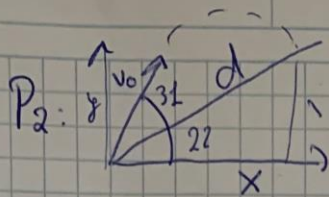
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$$v_x = 150 \cos 33 = 90'27 \text{ m/s}$$

$$v_y = 150 \sin 33 = 119'79 \text{ m/s}$$

slope eq: $\text{tg } 22 = \frac{y}{x} \rightarrow y = 0'404x$

$$y = mx + n \quad n = 0 \rightarrow y = 0'404x$$

$$x = x_0 + \int_0^t v_x dt = x_0 + (v_0 \cos \alpha) t \Rightarrow t = \frac{x}{150 \cos 33}$$

$$y = y_0 + \int_0^t v_y dt = y_0 + (v_0 \sin \alpha) t - \frac{1}{2} g t^2$$

$$y = 150 \sin 33 \left(\frac{x}{150 \cos 33} \right) - \frac{1}{2} \cdot 10 \cdot \left(\frac{x}{150 \cos 33} \right)^2$$

Now, we equal the eq.

$$150 \sin 33 \left(\frac{x}{150 \cos 33} \right) - \frac{1}{2} \cdot 10 \cdot \left(\frac{x}{150 \cos 33} \right)^2 = 0'404x$$

$$x = 1504'48 \text{ m}$$

So we calculate d.

$$d = \frac{x}{\cos 22} ; d = 1622'63 \text{ m}$$

Flight time:

$$t = \frac{x}{v_x} ; t = 17'97 \text{ s}$$

$$|v| = \sqrt{(v_x)^2 + (v_y)^2}$$

$$|v| = 108'34 \text{ m/s}$$

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