

$$v_0 := 40 \quad a := 9.8$$

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Suppress symbolic evaluation of **v0** and **a**

$$y(t) := v_0 \cdot t - \frac{1}{2} \cdot a \cdot t^2$$

$$y'(t) := \frac{d}{dt} y(t) \rightarrow v_0 - a \cdot t$$

y [Prime'] (t) : ? y(t) [Tab] t [Ctrl.]

The **[Prime']** key is above the **[Tab]** key.

Given

$$y'(t_{\max}) = 0$$

$$t_{\max} := \text{Find}(t_{\max}) \rightarrow \frac{v_0}{a}$$

$$t_{\max} = 4.082$$

$$y'(t_{\max}) \rightarrow 0$$

Check answer.

$$y_{\max} := y(t_{\max}) \rightarrow \frac{1}{2} \cdot \frac{v_0^2}{a}$$

$$y_{\max} = 81.633$$

Maximum height!

$$t := 0, 0.1 .. 10$$

