

Question #71986, Physics / Mechanics | Relativity

If the helicopter can fly with a cruise speed of V_x MPH and carry a mass of m kg explain how you would calculate the distance from the landing point that the helicopter would need to release the mass to land at the landing point assuming that the helicopter cruises at a height of h feet. State any equations that you would use.

Solution

Since the load starts falling from zero vertical speed, the height is calculated as follows.

$$h = \frac{gt^2}{2}$$

Hence time to fall is $t = \sqrt{\frac{2h}{g}}$.

Assuming zero air drag and thus constant horizontal speed of the load, the horizontal distance is calculated as follows.

$$d = v_x t = v_x \sqrt{\frac{2h}{g}}$$

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