

Physics EH gravity example
2 arrows shot up

$v_i = +25 \text{ m/s}$ $a = -9.81 \text{ m/s}^2$
 ① $d = \frac{v_f^2 - v_i^2}{2a}$
 $d = \frac{0^2 - (+25 \text{ m/s})^2}{2(-9.81 \text{ m/s}^2)}$
 $d = 31.9 \text{ m}$
 $\frac{d}{2} = 15.9 \text{ m}$ $t = 0.6 \text{ s}$ $t = 2.6 \text{ s}$

$d = v_i t + \frac{1}{2} a t^2$
 $15.9 = \frac{1}{2} (-9.81) t^2$
 $t = \frac{\sqrt{2(15.9)}}{-9.81} = 1.80 \text{ s}$

② $a = -9.81$ $v_f = 0$ $d = 31.9 \text{ m}$
 $v_i = ?$ $t = 1.80$
 $d = (v_i)t + \frac{1}{2} a t^2$
 $v_i = \frac{d - \frac{1}{2} a t^2}{t}$
 $v_i = \frac{31.9 - \frac{1}{2}(-9.81)(1.8)^2}{1.8}$
 $v_i = \frac{31.9 + 15.89}{1.8}$
 $v_i = 26.55 \text{ m/s}$

Mar 16-9:10 AM