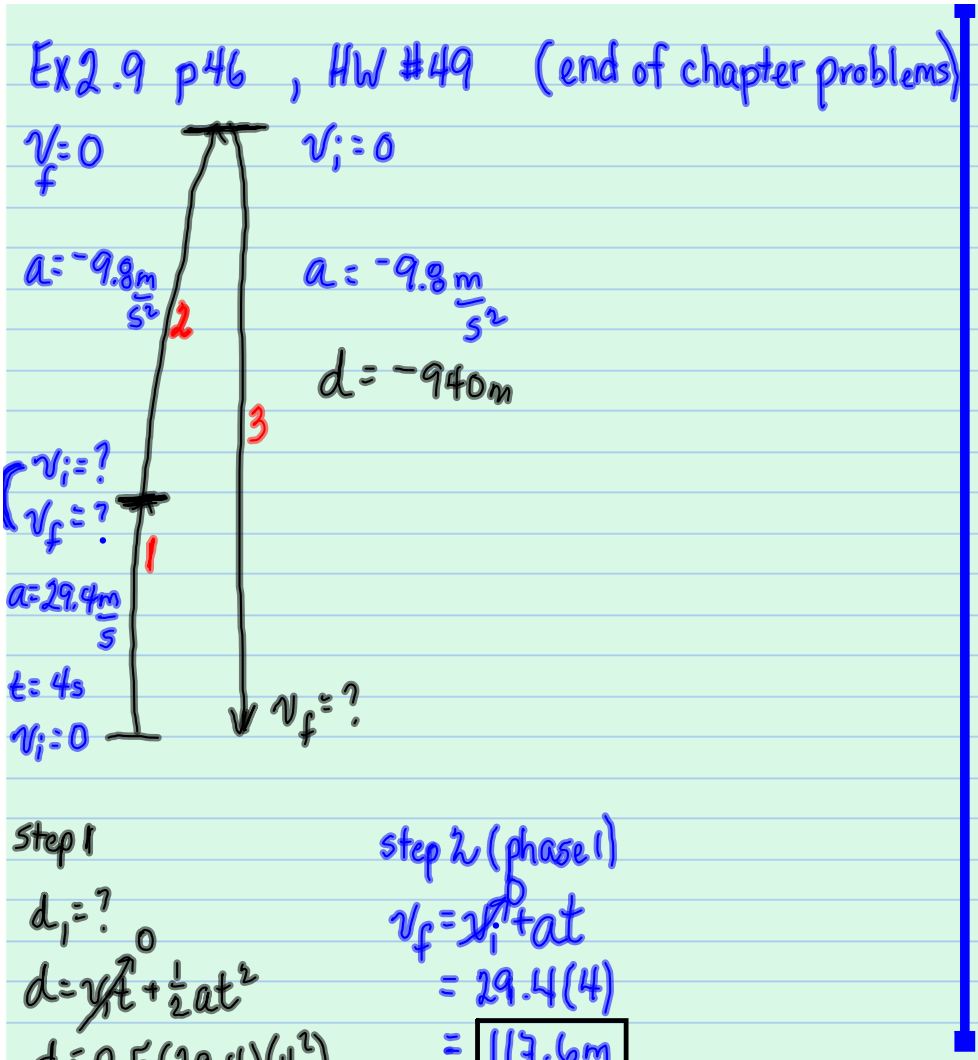
Ex 2.9 p46 , HW #49 (end of chapter problems)




$d_1 + d_2 = d_{max}$

**step 1**

$d_1 = ?$

$d = v_i t + \frac{1}{2} a t^2$ ($v_i = 0$)

$d = 0.5(29.4)(4^2)$

$d_1 = \boxed{235m}$

**step 2 (phase 1)**

$v_f = v_i + at$ ($v_i = 0$)

$= 29.4(4)$

$= \boxed{117.6 \frac{m}{s}}$

**step 3 (phase 2)**

$d_2 = ?$

$v_f^2 = v_i^2 + 2ad$ ($v_f = 0$)

$\frac{-v_i^2}{2a} = d$

$\frac{-(117.6)^2}{2(-9.8)} = \boxed{705m} = d$

**step 4 (phase 3)**

$v_f^2 = v_i^2 + 2ad$ ($v_i = 0$)

$v_f = \sqrt{2(-9.8)(-940)}$

$v_f = 136 \frac{m}{s}$ down

$d_1 + d_2 = 235 + 705 = 940m$