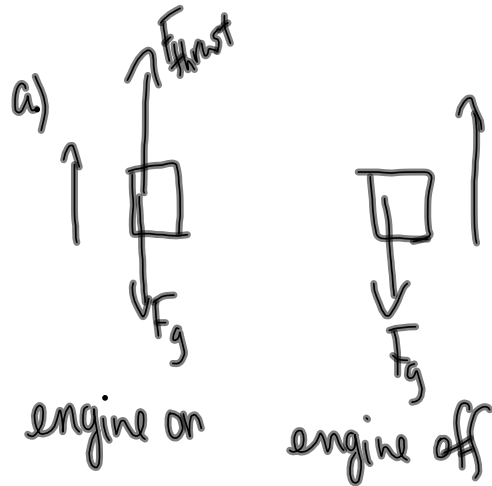


Review

21.  $m = 1.0 \times 10^3 \text{ kg}$   
 $h = 5.0 \times 10^3 \text{ m}$  (max height)  
 $x = 1.0 \times 10^3 \text{ m}$  (eng on)



b)  $\Delta d = 4.0 \times 10^3 \text{ m}$

$v_2 = 0$

$v_1 = ?$

$a = -9.8 \text{ m/s}^2$

$v_2^2 = v_1^2 + 2a\Delta d$

$0 = v_1^2 + (2)(-9.8 \text{ m/s}^2)(4.0 \times 10^3 \text{ m})$

$v_1 = 280 \text{ m/s}$

c) engine off:  $a = -9.8 \text{ m/s}^2$

engine on:

$v_1 = 0$

$v_2 = 280 \text{ m/s}$

$\Delta d = 1.0 \times 10^3 \text{ m}$

$a = ??$

$v_2^2 = v_1^2 + 2a\Delta d$

$v_2^2 - v_1^2 = 2a\Delta d$

$a = \frac{v_2^2 - v_1^2}{2\Delta d}$

$a = \frac{(280 \text{ m/s})^2 - 0}{2(1.0 \times 10^3 \text{ m})}$

$a = 39 \text{ m/s}^2$

