HW#4 Answers

1. $t = \frac{D}{v_0 \cos\theta}$

$$H = -D\tan\theta + \frac{1}{2}g\left(\frac{D}{v_0\cos\theta}\right)^2$$

top: $v_x = v_0\cos\theta$

$v_y = 0$

ground: $v_x = v_0\cos\theta$

$v_y = -\sqrt{(v_0\sin\theta)^2 + 2gH}$

2. $D = \frac{(v_0\sin\theta)^2}{2a}$

$$L = \frac{2v_0^2\sin\theta\cos\theta}{a}$$

3. $T = \frac{D}{v_0\cos\theta}$

$$y_D = D\tan\theta - \frac{1}{2}g\left(\frac{D}{v_0\cos\theta}\right)^2$$

$$y_B = H - \frac{1}{2}g\left(\frac{D}{v_0\cos\theta}\right)^2$$

same ($H = D\tan\theta$)

4. $D = v\sqrt{\frac{2H}{g}} - \frac{1}{4}H$