

Recitation 8 Answers

$$1. x = (v_0 \cos \theta)t \quad y = -\frac{1}{2}gt^2 + (v_0 \sin \theta)t$$

$$2. t = \frac{2v_0 \sin \theta}{g}$$

$$3. x = \frac{2v_0^2 \sin \theta \cos \theta}{g} = \frac{v_0^2 \sin 2\theta}{g}$$

$$4. \frac{2v_0^2}{g}(2 \cos 2\theta) = 0 \Rightarrow \cos 2\theta = 0 \Rightarrow 2\theta = \frac{\pi}{2} \Rightarrow \theta = \frac{\pi}{4}$$

5. 353.6 feet

6. 1035.189 feet

7. yes. important