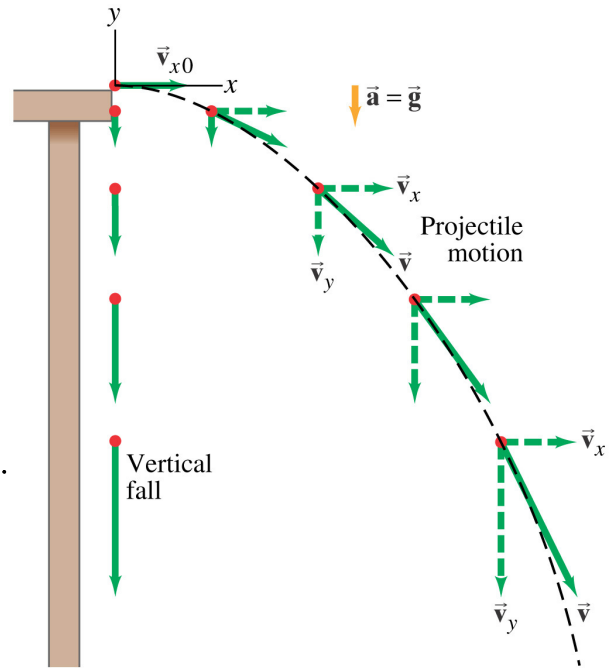


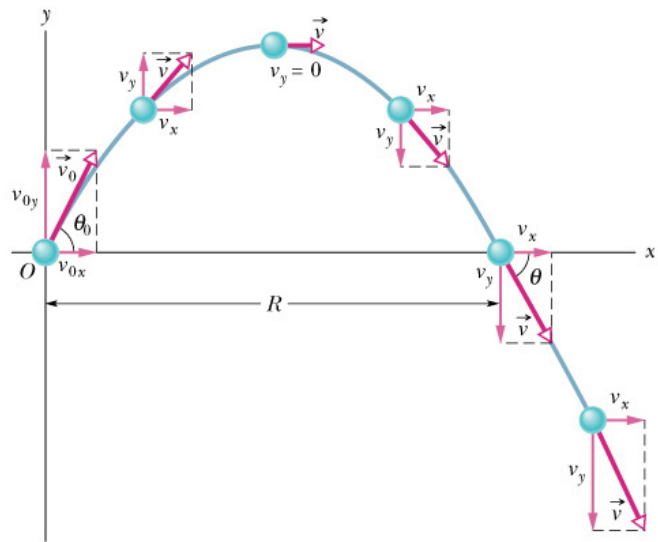
06 JAN 10

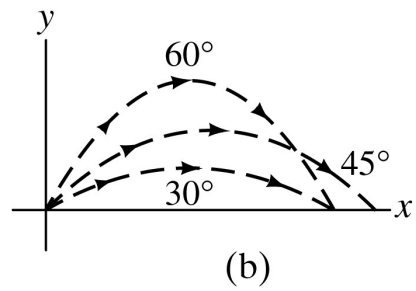
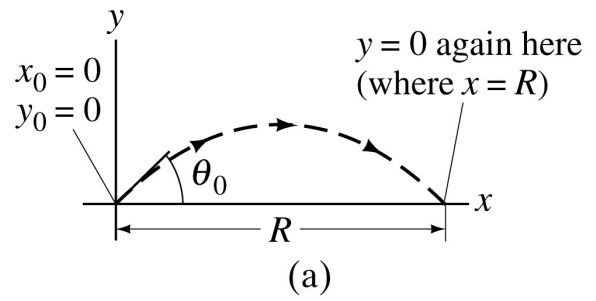
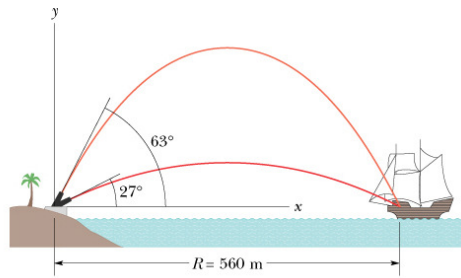
- finish Projectile Motion lab α
 - introduction to projectile motion
 - scan questions
 - midterm questions
- } tomorrow

Acceleration due to gravity only affects the motion in the y direction.

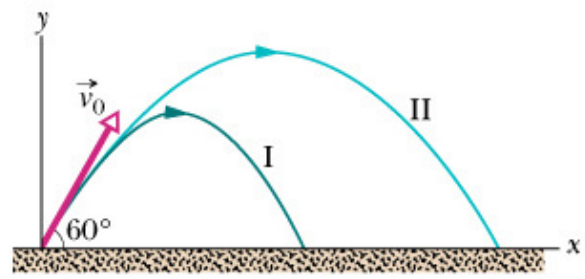
Projectile motion is easily described using parametric equations: decompose the motion into x & y components.

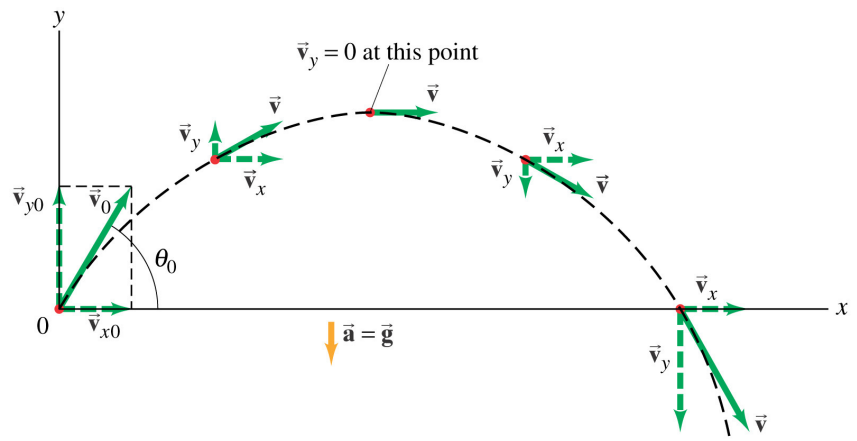




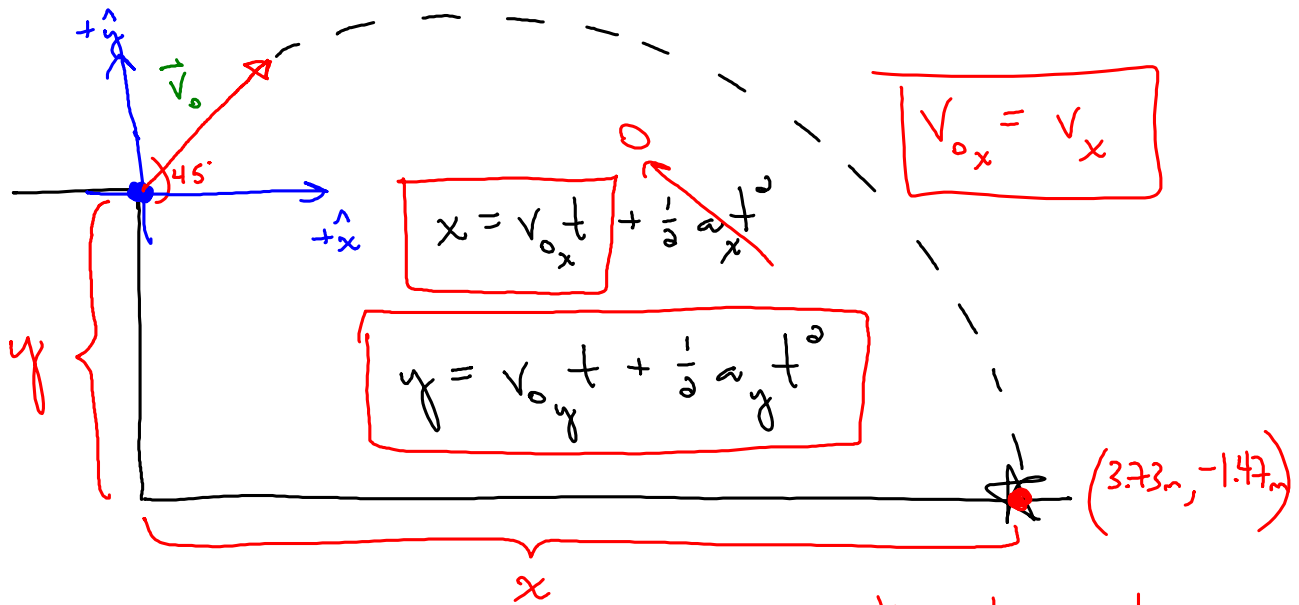


Copyright © 2005 Pearson Prentice Hall, Inc.





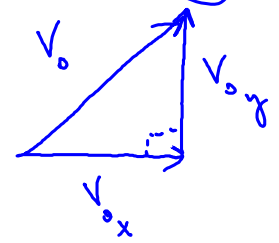
Copyright © 2005 Pearson Prentice Hall, Inc.



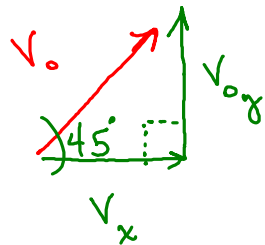
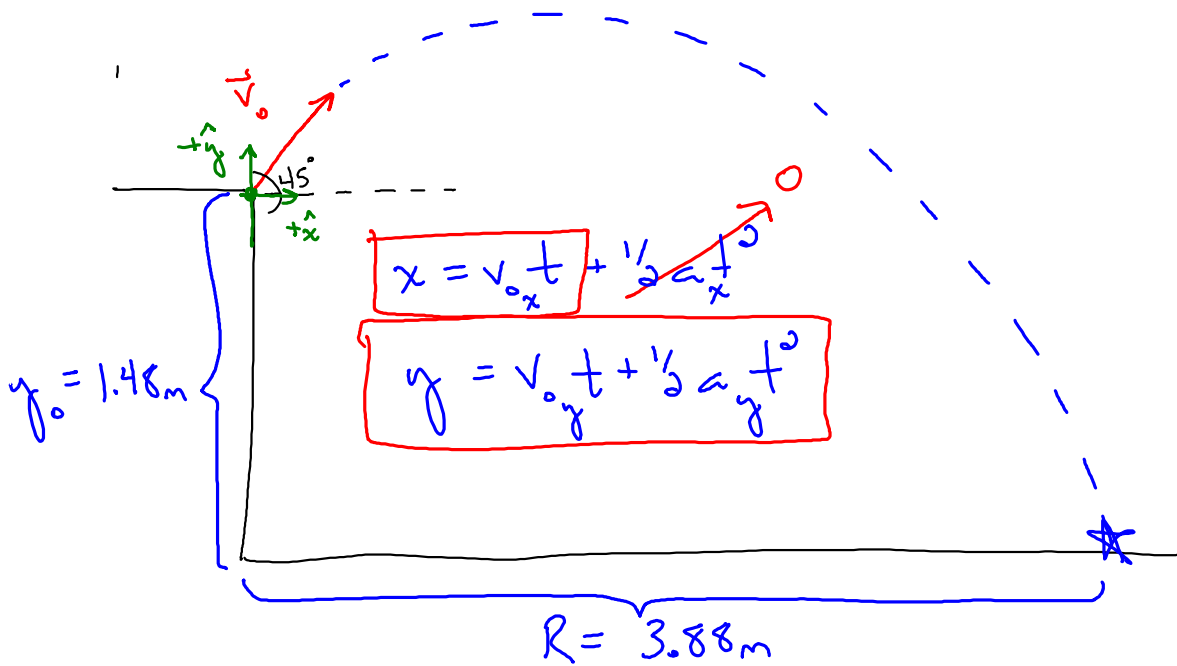
with $t = 1.24\text{s}$

$$3.73 = v_{0x}(1.24)$$

$$-1.47 = v_{0y}(1.24) + \frac{1}{2}(-9.8)(1.24)^2$$



$$v_0 = \sqrt{v_{0y}^2 + v_{0x}^2}$$



$$\cos 45^\circ = \frac{v_x}{v_0} \Rightarrow v_x = v_0 \cos 45^\circ$$

$$\sin 45^\circ = \frac{v_{0y}}{v_0} \Rightarrow v_{0y} = v_0 \sin 45^\circ$$

x: $x = v_x t \Rightarrow R = v_x t$

$$t = \frac{R}{v_x} = \frac{R}{v_0 \cos 45^\circ}$$

y: $y = v_{0y}t + \frac{1}{2}a_y t^2$

$$y = v_0 \sin 45^\circ \left(\frac{R}{v_0 \cos 45^\circ} \right) + \frac{1}{2} a \left(\frac{R}{v_0 \cos 45^\circ} \right)^2$$

$$-1.48\text{m} = R \cancel{\sin 45^\circ} + \frac{1}{2} (-9.8\text{m/s}^2) \left(\frac{R}{v_0 \cos 45^\circ} \right)^2$$

$$-1.48\text{m} = 3.88\text{m} - 4.9\text{m/s}^2 \left(\frac{3.88\text{m}}{v_0 \cos 45^\circ} \right)^2$$

$$v_0 = \sqrt{\frac{y - R}{-4.9}}$$

to be continued...

Homework

HRW chapter 4

questions 4, 6, 7
4, 8, 9, ← old book

problems 1, 3, 6, 11
3, 1, 6, 9 ← old book