

# Cornell Notes

Name Rachel Monahan

Date 10-3-2011

Topic Physics Projectile Motion

Class/Subject Frayoso Per. 4

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obj  
Chapter 3  
Scalar  
Vector  
Pythagorean Theorem  
Trig Functions  
Sample Problem

Be able to define motion in 2-dimensions

Introduction to Vectors

physical quantity that has magnitude but no direction

Ex: speed, volume, # of pgs in textbook, distance

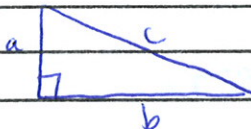
Vector

physical quantity that has both magnitude & direction

Ex: displacement, velocity, acceleration

Pythagorean Theorem

$$c^2 = a^2 + b^2$$

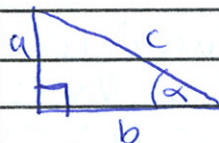


Use to find the magnitude of the resultant vector

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Trig Functions

copy



SOHCAHTOA:

$$\sin \alpha = \frac{\text{opp}}{\text{hyp}} = \frac{a}{c}$$

$$\cos \alpha = \frac{\text{adj}}{\text{hyp}} = \frac{b}{c}$$

$$\tan \alpha = \frac{\text{opp}}{\text{adj}} = \frac{a}{b}$$

Sample Problem

An archaeologist climbs the Great Pyramid in Giza, Egypt. The pyramid's height is 136m & its width is  $2.30 \times 10^2$ m. What is the magnitude and the direction of the displacement of the archaeologist

Copy Pythagorean Theorem & Trig Functions in back of notebook

HOMEWORK: Review notes for problems tomorrow

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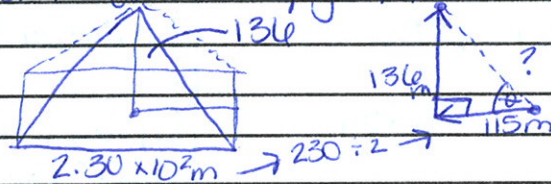
Topic Physics Projectiles/Vectors

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cont. ...

after she has climbed from the bottom of the pyramid to the top?



$$c^2 = a^2 + b^2$$

$$c^2 = (136)^2 + (115)^2$$

$$c^2 = 31725$$

$$\text{displacement} = 178\text{m} @ 50^\circ$$

$$c = 178\text{m}$$

Find the measure of angle  $\theta$

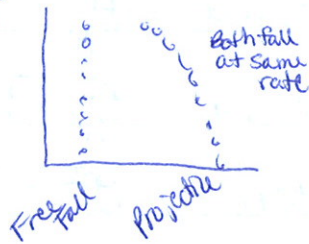
$$\tan \theta = \frac{136}{115}$$

$$= 50^\circ$$

## Projectiles

Objects that are thrown or launched into the air & are subject to gravity

## Projectile Motion



Curved path that an object follows when thrown, launched, or otherwise projected near the surface of the Earth.

If air resistance is disregarded, projectiles follow parabolic trajectories.

Projectile Motion is free fall with an initial horizontal velocity. Horizontal velocity will be considered constant.

## Projectile Motion

x-axis  
• constant  $v$

y-axis  
• free fall acceleration

$$v_{avg} = \frac{\Delta x}{\Delta t}$$

$g = -9.81 \text{ m/s}^2$   
• free fall equations