

VECTORS REVIEW

List:

Law of Sines

$$\frac{\sin A}{a} = \frac{\sin B}{b}$$

Law of Cosines:

$$a^2 = b^2 + c^2 - 2bc \cos A$$

Parametric

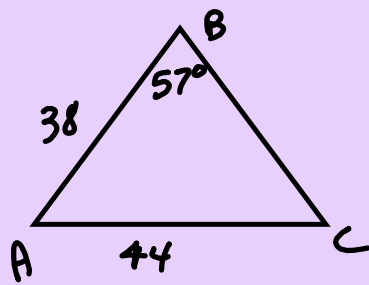
$$x_t = |v|t \cos \theta$$

$$y_t = \frac{1}{2}at^2 + |v|t \sin \theta + S_0$$

$$a = -32 \frac{\text{ft}}{\text{s}^2} \quad a = -9.8 \frac{\text{m}}{\text{s}^2}$$

Law of Sines

AAS, ASA, SSA



Find A.

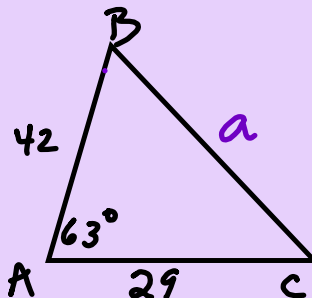
$$\frac{\sin C}{38} = \frac{\sin 57^\circ}{44}$$

$$C = 46^\circ$$

$C = 46^\circ$	$C' = 180^\circ - 46^\circ = 134^\circ$
$B = 57^\circ$	$B = 57^\circ$
$A = 77^\circ$	$A' =$



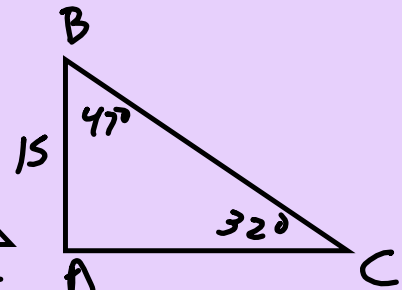
Law of cosines



Cosines
Find C.

Find a.

Find smallest angle next!



Law of Sines

SSS

$$27^2 = 15^2 + 20^2 - \underbrace{2(15)(20)\cos A}$$

$$\frac{27^2 - 15^2 - 20^2}{-600} = \frac{\cancel{-600}\cos A}{\cancel{-600}}$$

Given:

$$|v| = 24 \quad \theta = 220^\circ$$

Find $\langle x, y \rangle$

$$x = r \cos \theta = 24 \cos 220^\circ = -18.39$$

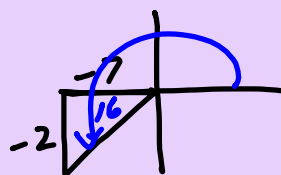
$$y = 24 \sin 220^\circ = -15.43$$

$$\langle -18.39, -15.43 \rangle$$

Given

$$\langle -7, -2 \rangle$$

Find $|v|$
and θ .



$$|v| = r = \sqrt{4 + 49} \quad \tan \theta = \frac{y}{x} = \frac{-2}{-7}$$

$$\sqrt{r^2} = \sqrt{53}$$

$$r = \sqrt{53}$$

$$\tan^{-1}(2/7) = 16^\circ$$

$$|v| = \sqrt{53}$$

$$\theta = 196^\circ$$

$$\langle 2, -8 \rangle \cdot \langle 12, 3 \rangle$$

$$= (2 \cdot 12) + (-8 \cdot 3)$$

$$= 24 + -24$$

$$= 0$$

orthogonal

Parallel or orthogonal?

$$m_1 = \frac{-8}{2}$$

$$= -4$$

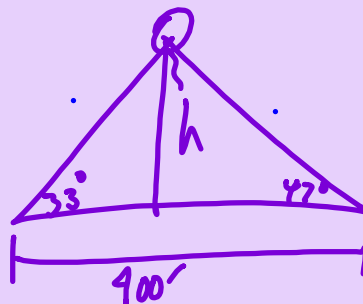
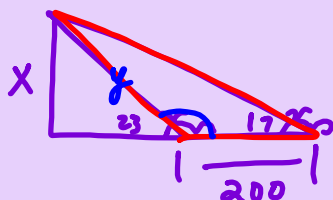
$$m_2 = \frac{3}{12}$$

$$= 1/4$$

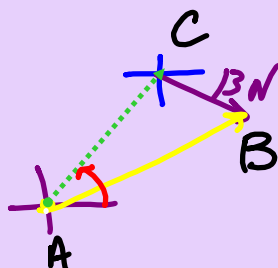
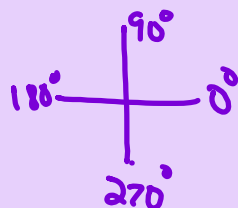
Word Problems



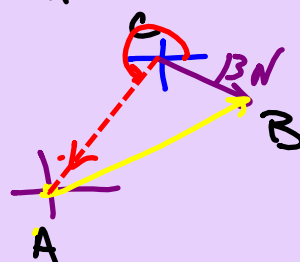
11-12)

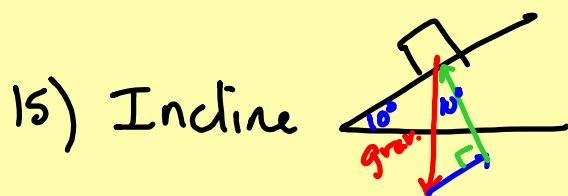


13-14) Vector (Forces)



resultant =
Start to end
equilibrium =
end to start





16-17) Navigation

18-19) Parametric Equations

$$x_t =$$

$$y_t =$$

