Vectors

Are quantities that have magnitude and direction. Ex: 2m North

Scalar

Is a quantity that has magnitude only. Ex: 2m (no direction)

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Vectors vs. Scalars

Vectors	Scalars
Change in position (Displacement)	Length (Distance)
Velocity	Speed
	Time
Weight (Force)	Mass
Force	

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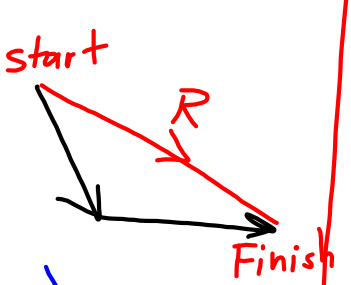
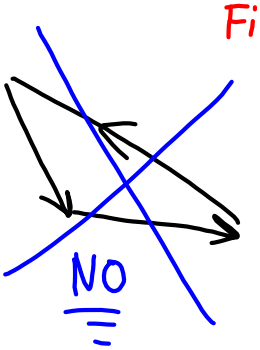
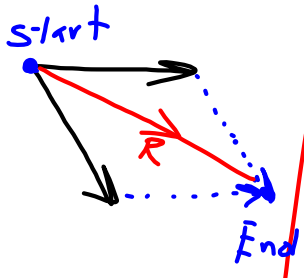
Adding Vectors

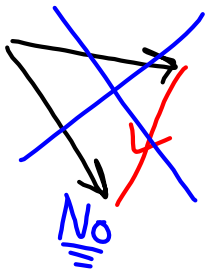
1) Tip to tail



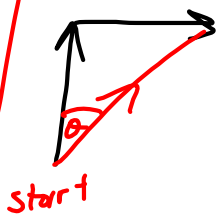


2) Concurrent





3) ⊥ to each other



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

Dir: $\tan\theta = \frac{opp}{adj}$

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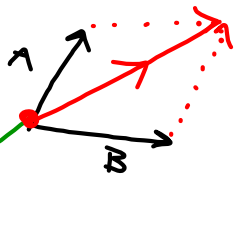
Vocabulary

Resultant: What you get when you add vectors. Points from start to finish.

Equilibrant: A vector that balances existing vectors. It is equal in magnitude but opposite in direction to the resultant.

Equilibrant: causes balance Opposite way



← Resultant (Between the original vectors)

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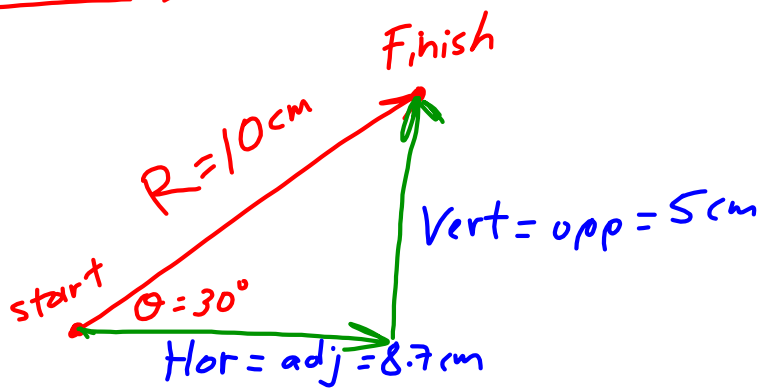
Hor. & Vert Components



Hor

$\cos\theta = \frac{adj}{hyp}$

$\cos 30^\circ = \frac{Hor}{10cm}$

$Hor = 8.7cm$

$\sin\theta = \frac{\frac{Vert}{opp}}{hyp}$

$\sin 30^\circ = \frac{Vert}{10cm}$

$Vert = 5cm$

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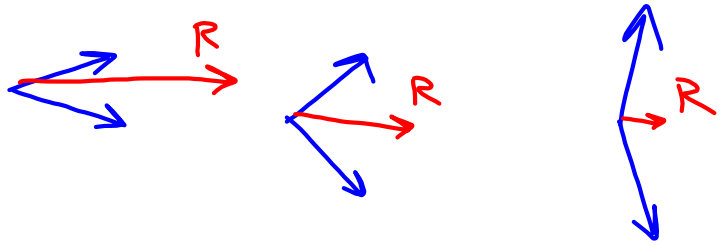
Max Min

When we have two vectors, A & B, the :

Maximum resultant happens at 0° and A + B

Minimum resultant happens at 180° and |A − B|

★ As θ ↑, R ↓



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