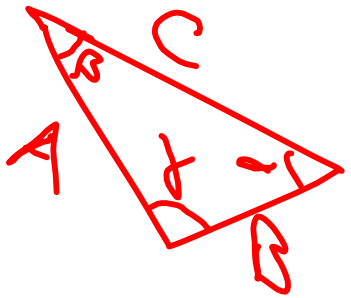
Vectors = magnitude & dir

① Adding vector

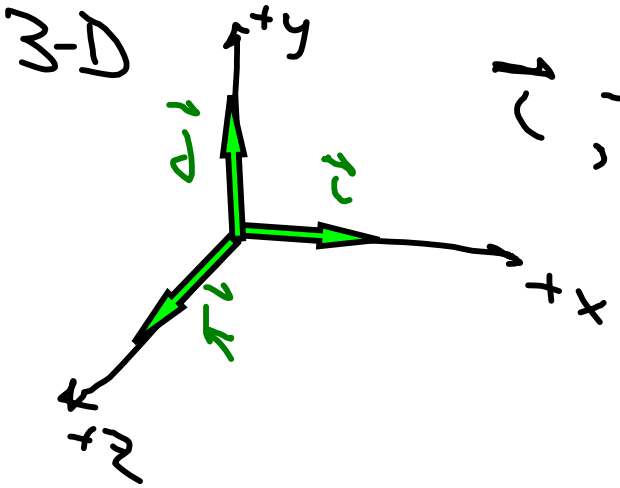
2-D
- graphical → head to tail
- algebraically → break into components then use pythag



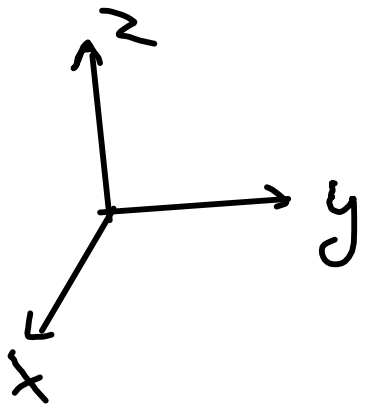
(special case of LAW of Cosines #29)

$C^2 = A^2 + B^2 - 2AB\cos\gamma$

3-D



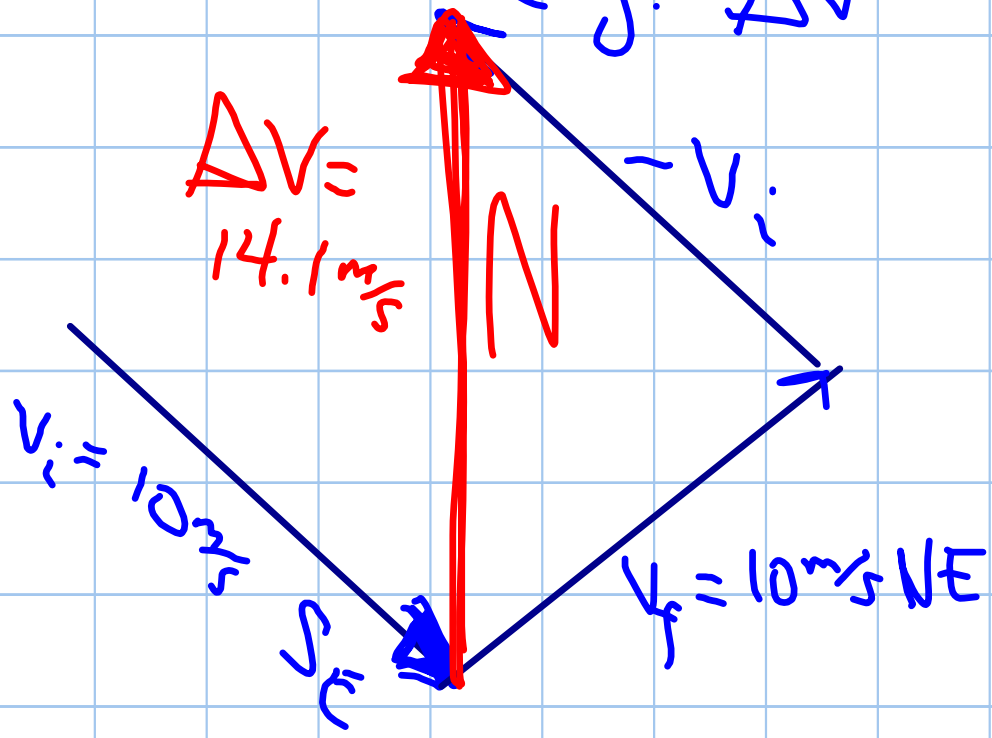
$\vec{i}, \vec{j}, \vec{k}$



② Subtracting Vectors

Just ADD the neg

e.g. $\Delta\vec{v} = \vec{v}_f - \vec{v}_i$



$(\vec{F} = m\vec{a})$

3 2 Kinds of Vector Product

i) SCALAR
DOT

$\vec{A} \cdot \vec{B} = AB\cos\theta$

$\cos 90° = 0°$

Sample prob 3-6 pg 45

$\vec{A} = 3\vec{i} - 4\vec{j}$

$\vec{B} = -2\vec{i} + 3\vec{k}$

$\vec{A} \cdot \vec{B} = AB\cos\theta$

$= \sqrt{3^2+(-4)^2}\sqrt{4+9}\cos\theta$

$\vec{A} \cdot \vec{B} = 5\sqrt{13}\cos\theta$

ii) VECTOR
CROSS

magnitude of solution

$\vec{A} \times \vec{B} = AB\sin\theta$

$\sin 90° = 1$

$\sin 0° = 0$

75 pts part a

$\vec{A} \cdot \vec{B} = (3\vec{i} - 4\vec{j}) \cdot (-2\vec{i} + 3\vec{j})$

$= -6\vec{i}\cdot\vec{i} + 9\vec{i}\cdot\vec{j} + 8\vec{j}\cdot\vec{i}$ ($\vec{i}\cdot\vec{j}$ and $\vec{j}\cdot\vec{i}$ are $0°$)

$- 12\vec{j}\cdot\vec{j}$

$= -6 - 12 = -18$

$5\sqrt{13}\cos\theta = \frac{-18}{5\sqrt{13}}$

$\theta = 109°$

(25)

$$A + B = 6\vec{i} + 1\vec{j}$$

$$A - B = -4\vec{i} + 7\vec{j}$$

$$2A =$$

(29) $\Delta d = d_2 - d_1$

(Q5)

a) 

c) 

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