

3 Resultant and parallel vectors DONE

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Resultant

$$\text{Resultant}(\underline{a}, \underline{b})$$

$$= \underline{a} + \underline{b}$$

eg: {

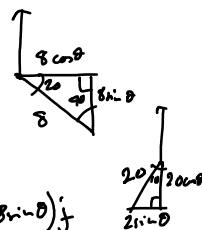
$$|\underline{a}| = 8, +110^\circ$$

$$|\underline{b}| = 20, +90^\circ$$

$$\underline{a} = (8 \cos 20) \underline{i} - (8 \sin 0) \underline{j}$$

$$\underline{b} = (-20 \sin 10) \underline{i} - (20 \cos 10) \underline{j}$$

$$\therefore \underline{a} + \underline{b} = 4.04 \underline{i} - 22.4 \underline{j}$$



Collinear points

A (-3, -9) Gradient $\left(\frac{-9-1}{-3-2}\right) = \frac{-10}{-5} = 2$ Check for C

B (2, 1) $\therefore y-1 = 2(x-2)$

$$13-1 = 12$$

$$12 = 12$$

C (8, 13) Line AB goes through $2(8-2) = 12 \therefore C$ works

\therefore All points are collinear.

Parallel vectors

$$3 \begin{bmatrix} 1 \\ 2 \end{bmatrix} = \begin{bmatrix} 3 \\ 6 \end{bmatrix}$$

Scalar multiple

$$\underline{a} = k \underline{b}$$

Unit vectors

$$\underline{a} = 2 \underline{i} - 7 \underline{j}$$

$$|\underline{a}| = \sqrt{53} \quad \underline{\hat{a}} = \frac{\underline{a}}{|\underline{a}|}$$

$$\underline{\hat{a}} = \frac{1}{\sqrt{53}} (2 \underline{i} - 7 \underline{j})$$