

ASSIGNMENT 1

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Download all latex-tikz codes from

https://github.com/vishwahurakadli/EE3900/blob/main/Assignment_1/Assignment_1.tex

1 PROBLEM

(Vectors-2.20) If

$$\mathbf{P} = 3\mathbf{a} - 2\mathbf{b} \quad (1.0.1)$$

$$\mathbf{Q} = \mathbf{a} + \mathbf{b} \quad (1.0.2)$$

find R. which divides PQ in the ratio 2 : 1

- 1) internally
- 2) externally

2 SOLUTION

- 1) section formula for internal division for ratio m : n is given by

$$\mathbf{I} = \frac{m * \mathbf{A} + n * \mathbf{B}}{m + n} \quad (2.0.1)$$

so for ratio 2 : 1 R will be given by

$$\mathbf{R} = \frac{2 * (3\mathbf{a} - 2\mathbf{b}) + (\mathbf{a} + \mathbf{b})}{2 + 1} \quad (2.0.2)$$

$$\mathbf{R} = \frac{7\mathbf{a}}{3} - \mathbf{b} \quad (2.0.3)$$

will divide PQ internally

- 2) similarly section formula for external division for ration m : n is given by

$$\mathbf{E} = \frac{m * \mathbf{A} - n * \mathbf{B}}{m - n} \quad (2.0.4)$$

so for ratio 2 : 1 R will be given by

$$\mathbf{R} = \frac{2 * (3\mathbf{a} - 2\mathbf{b}) - (\mathbf{a} + \mathbf{b})}{2 - 1} \quad (2.0.5)$$

$$\mathbf{R} = 5\mathbf{a} - 5\mathbf{b} \quad (2.0.6)$$

will divide PQ externally