MAT 102

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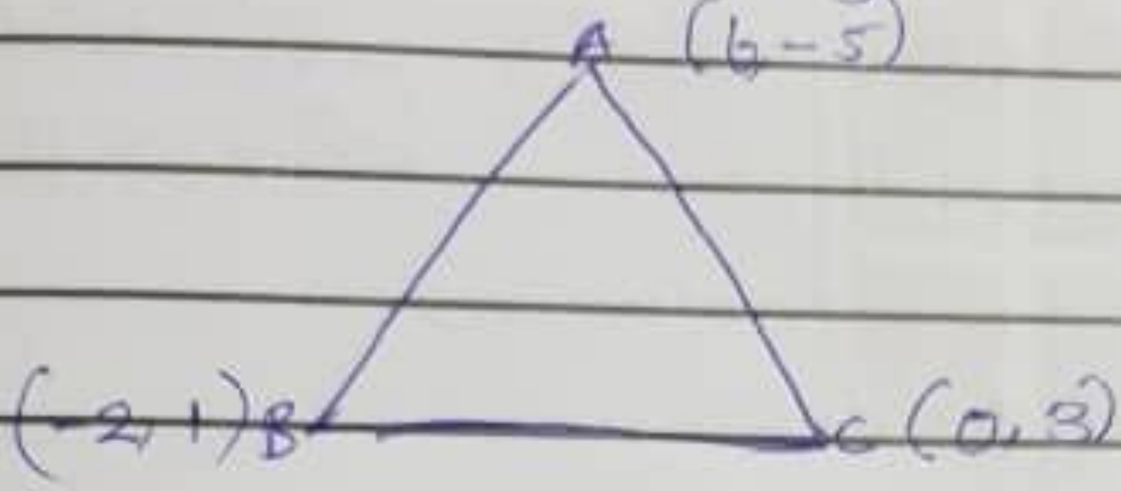
Department: Computer Engineering | Course: MAT 102 Assignment

(6-5)

1)



For ΔABC to be ~~Isosceles~~ Isoceles either $\bar{AB} = \bar{AC}$, $\bar{AB} = \bar{BC}$ or $\bar{BC} = \bar{AC}$

$$\bar{AB} = \sqrt{(6+2)^2 + (6)^2}$$

$$= \sqrt{8^2 + 6^2}$$

$$= \sqrt{100}$$

$$= 10$$

$$\bar{AC} = \sqrt{(6)^2 + (-5-3)^2}$$

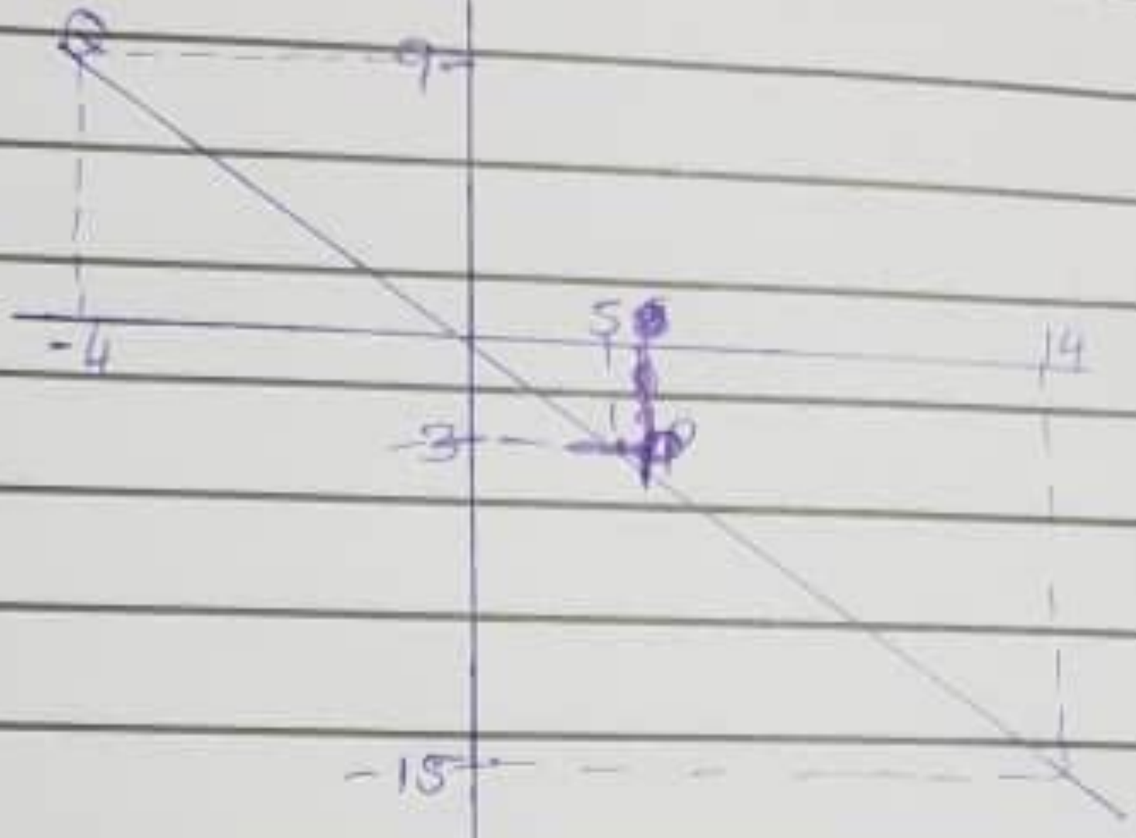
$$= \sqrt{6^2 + (-8)^2}$$

$$= \sqrt{100}$$

$$= 10$$

$\therefore \bar{AB} = \bar{AC}$

$\therefore$ It is an isosceles triangle.



P: divides $\overline{QR}$ internally

$$\frac{mx_2 + nx_1}{m+n}, \frac{my_2 + ny_1}{m+n} = (5, -3)$$

$$= \frac{m(14) + n(-4)}{m+n} = 5$$

$$= \frac{14m + (-4n)}{m+n} = 5$$

$$14m - 4n = 5m + 5n$$

$$14m - 5m = 5n + 4n$$

$$9m = 9n$$

$$\frac{m}{n} = \frac{9}{9}$$

$$\frac{m}{n} = \frac{1}{1}$$

∴ The ratio in which P divides QR is 1:1

Q R divides PQ externally

$$\frac{mx_2 - nx_1}{m-n}, \frac{my_2 - ny_1}{m-n} = (14, -15)$$

$$y = \frac{my_2 - ny_1}{m-n}$$

$$\frac{m(9) - n(-3)}{m-n} = -15$$

$$9m + 3n = -15$$
$$m-n$$

$$9m + 3n = -15m + 15n$$

$$9m + 15m = 15n - 3n$$

$$24m = 12n$$

$$\frac{m}{n} = \frac{12}{24}^{2}$$

$$\frac{m}{n} = \frac{2}{1}$$

$$m:n = 2:1$$

$\therefore$ R divides $\overline{PQ}$ in the ratio 2:1