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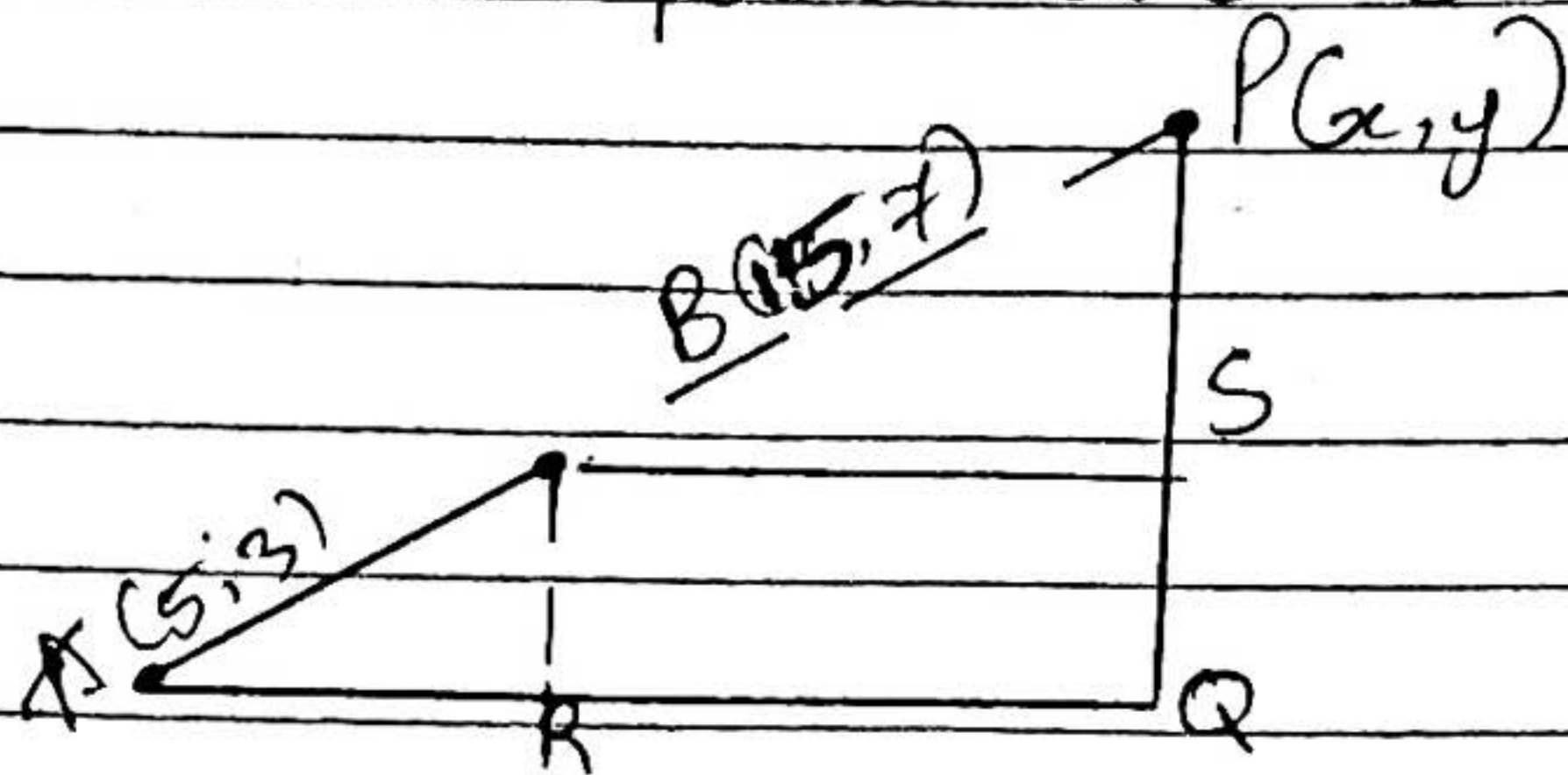
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DEPARTMENT: PETROLEUM ENGINEERING

1. If A and B are the points (5,3) and (5,7) respectively, find the co-ordinates of the point that divides AB externally in ratio 3:1



$$\frac{AP}{BP} = \frac{\lambda}{\mu} = \frac{3}{1}$$

By similar triangles

$$\frac{AQ}{RS} = \frac{\lambda}{\mu}$$

$$\Rightarrow \frac{x-5}{x-15} = \frac{3}{1}$$

$$(x-5)1 = 3(x-15)$$

$$x-5 = 5x-15$$

$$15-5 = 5x-x$$

$$\frac{2x}{2} = \frac{10}{2}$$

$$\therefore x = 5$$

Also

$$\frac{PQ}{PS} = \frac{\lambda}{\mu}$$

$$\frac{y-3}{y-7} = \frac{3}{1}$$

$$(y-3)1 = (y-7)3$$

$$y-3 = 3y-21$$

$$21-3 = 3y-y$$

$$\frac{2y}{2} = \frac{18}{2}$$

$$y = 9$$

\therefore The co-ordinates of the point P is (5,9) and it would divide AB externally into 3:1