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Mechatronics Engineering
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MAT 102

1 $|\overline{AB}| = \sqrt{6-(-2)+(-5-1)^2} = \sqrt{8^2+(-6)^2} = \sqrt{64+36} = \sqrt{100} = 10$ Units
$= 10$ Units

$|\overline{AC}| = \sqrt{(6-0)^2+(-5-3)^2} = \sqrt{6^2+(-8)^2} = 36+64 = 10$ units

$|\overline{BC}| = \sqrt{(-2-0)^2+(1-3)^2} = \sqrt{(-2)^2+(-2)^2} = \sqrt{4+4} = 4\sqrt{2}$ units

Since two sides are of the same length, it is an isosceles triangle.

2 $P = (5, -3)$
$Q = (-4, 9)$
$R = (14, -15)$

a) P divides QR
Note that P is in the middle so its internal

P $L_1 = \sqrt{(14-5)^2+(-15-(-3))^2}$
$= \sqrt{9^2+(-12)^2}$
$= \sqrt{81+144} = \sqrt{225} = 15$

Q $L_2 = \sqrt{(-4-5)^2+(9+3)^2}$
$= \sqrt{(-9)^2+12^2} = \sqrt{81+144}$
$= \sqrt{225} = 15$

R $L_3 = \sqrt{14-(-4)^2+(-15-9)^2}$
$= \sqrt{18^2+(-24)^2} = 324+576 = \sqrt{900}$
$= 30$

our ratio is $L_2 : L_3$
$15 : 30$
$1 : 2$

b) R divides PQ

$L_3 : L_2$

$30 : 15$

$2 : 1$

=10 Units

its