

Plan

1. No quiz today (Wednesday Sept 12)
2. Review questions
3. Worksheet practice

Sep 9-10:32 AM

Review question

Given the endpoints A(4,5) and B(18,20) of the line segment AB, what is the point C that divides the line AB in the ratio 2:5 from point B?

$$P_x = x_1 + \frac{r}{w}(x_2 - x_1)$$

$$P_y = y_1 + \frac{r}{w}(y_2 - y_1)$$

A(4,5) B(18,20) Ratio 2:5 from B

$$P_x = 18 + \left(\frac{2}{7}\right)(4 - 18)$$

$$P_x = 18 + \frac{2}{7}(-14)$$

$$P_x = 18 + (-4) = 14$$

$$P_y = 20 + \frac{2}{7}(5 - 20)$$

$$P_y = 20 + \frac{2}{7}(-15)$$

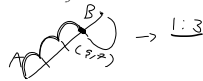
$$P_y = 20 + (-4.28) = 15.72$$

Point P = (14, 15.72)

Sep 9-10:37 AM

Given the end-points A(2, 1) and B(6, 9) of segment AB. The point P divides segment AB in the ratio 3:1 from A.

a) Determine the ratio in which point P divides segment AB from B.



b) Determine the coordinates of point P in two ways:

from A: A(2,1) B(6,9) Ratio 3:1

$$P_x = \frac{3x_2 + x_1}{4} = \frac{3(6) + 2}{4} = \frac{20}{4} = 5$$

From B: Ratio 1:3
A(2,1) B(6,9)
 $P_y = 1 + \frac{3}{4}(9-1) = 1 + \frac{3}{4}(8) = 1 + 6 = 7$
P(5,7)

$$P_x = 6 + \frac{1}{4}(2-6)$$

$$P_x = 6 + \frac{1}{4}(-4) = 6 + (-1) = 5$$

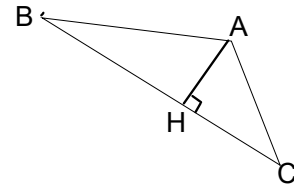
$$P_y = 9 + \frac{1}{4}(1-9)$$

$$P_y = 9 + \frac{1}{4}(-8) = 9 + (-2) = 7$$

Sep 9-10:42 AM

Given A(3,5), B(-4,4) and C(5,1), the vertices of triangle ABC, and point H the foot of the altitude to side BC, calculate the area of triangle ABC. Point H divides the line BC in the ratio 2:1 from point B.

Area of Triangle = $A = \frac{b \times h}{2}$



Sep 9-10:40 AM

A(3,5) B(-4,4) C(5,1)

Step 1: slope of BC
 $m_{BC} = \frac{y_2 - y_1}{x_2 - x_1} = \frac{1 - 4}{5 - (-4)} = \frac{-3}{9} = -\frac{1}{3}$
Line through A perpendicular to BC: $y - 5 = 3(x - 3)$
 $y - 5 = 3x - 9$
 $y = 3x - 4$

Step 2: Distance between BC
 $BC = \sqrt{(5 - (-4))^2 + (1 - 4)^2} = \sqrt{9^2 + (-3)^2} = \sqrt{81 + 9} = \sqrt{90} = 9.5$

Step 3: Distance from A to BC
 $AH = \sqrt{(3 - (-4))^2 + (5 - 4)^2} = \sqrt{7^2 + 1^2} = \sqrt{49 + 1} = \sqrt{50} = 7.1$

Area of ABC = $\frac{BC \times AH}{2} = \frac{9.5 \times 7.1}{2} = 33.5$

Sep 10-10:45 AM

Given M(1, -2) the mid-point of segment AB. Determine the coordinates of B if the coordinates of A are A(-3, 4)?

A(-3, 4) M(1, -2) B(x, y)

$$M_x = \frac{x_1 + x_2}{2}$$

$$2(1) = (-3) + x$$

$$2 = x - 3$$

$$2 + 3 = x$$

$$5 = x$$

Sep 9-10:42 AM

Worksheet

Q 1 to 5 only

Sep 11-10:26 AM

$$M = (1, -2)$$

$$A = (-3, 4)$$

$$B = (x, y)$$

$$M_y = \frac{y_1 + y_2}{2}$$

$$2(-2) = \frac{y + 4}{2}$$

$$-4 = y + 4$$

$$-4 - 4 = y$$

$$\boxed{-8 = y}$$

Sep 11-10:17 AM