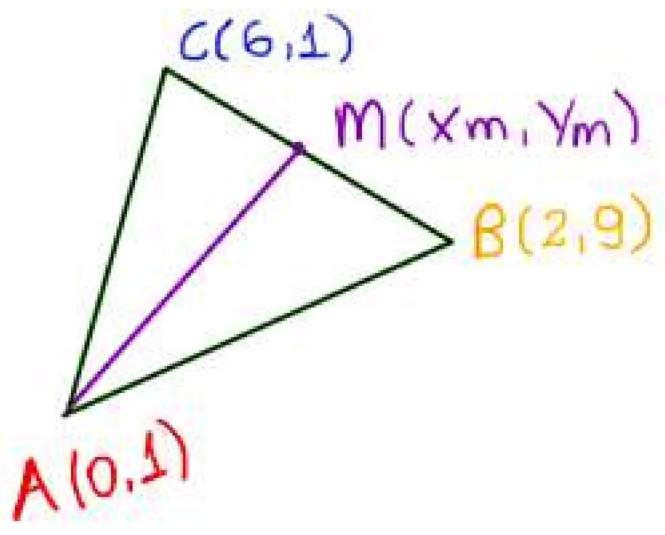
1. Calcule a medida da mediana relativa ao vértice A do triângulo ABC. Dados: A(0, 1); B(2, 9) e C(6, 1).



Calculando o ponto médio M:

$X_m = \frac{X_B + X_C}{2}$ $Y_m = \frac{Y_B + Y_C}{2}$

$X_m = \frac{2+6}{2}$ $Y_m = \frac{9+1}{2}$

$X_m = 4$ $Y_m = 5$

Mediana = d_{AM}

$d_{AM}^2 = (X_A - X_m)^2 + (Y_A - Y_m)^2$

$d_{AM}^2 = (0-4)^2 + (1-5)^2$

$d_{AM}^2 = (-4)^2 + (-4)^2$

$d_{AM} = \sqrt{32}$

$d_{AM} = 4\sqrt{2}$

$\boxed{AM = 4\sqrt{2}}$

2. Dados os vértices A(2, 1), B(18, 3) e C(7, 11), determine o baricentro.

Baricentro = $G(x, y)$

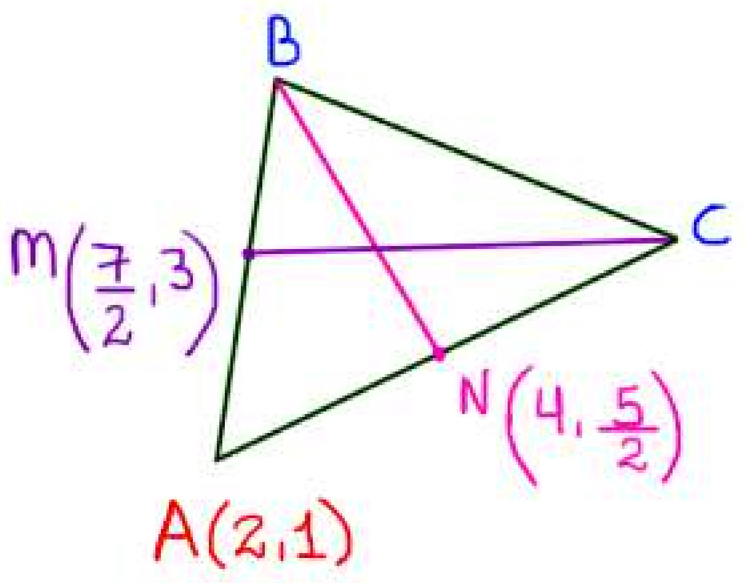
$X_G = \frac{X_A + X_B + X_C}{3}$ $Y_G = \frac{Y_A + Y_B + Y_C}{3}$

$X_G = \frac{2 + 18 + 7}{3}$ $Y_G = \frac{1 + 3 + 11}{3}$

$X_G = 9$ $Y_G = 5$

$\boxed{G(9,5)}$

3. Num triângulo ABC são dados o ponto A=(2, 1), o ponto M=$\left(\frac{7}{2}, 3\right)$, que é o ponto médio do lado AB, e o ponto N=$\left(4, \frac{5}{2}\right)$, que é ponto médio do lado AC. Determine os vértices B e C e calcule o perímetro do triângulo ABC.



Calculando o vértice B:

$X_m = \frac{X_B + X_A}{2}$ $Y_m = \frac{Y_B + Y_A}{2}$

$\frac{7}{2} = \frac{X_B + 2}{2}$ $3 = \frac{Y_B + 1}{2}$

$X_B = 5$ $Y_B = 5$

B (5,5)

Calculando o vértice C:

$X_N = \frac{X_C + X_A}{2}$ $Y_N = \frac{Y_C + Y_A}{2}$

$4 = \frac{X_C + 2}{2}$ $\frac{5}{2} = \frac{Y_C + 1}{2}$

$X_C = 6$ $Y_C = 4$

C(6,4)

$P = d_{AC} + d_{AB} + d_{BC}$

$d_{AC}^2 = (2-6)^2 + (1-4)^2$

$d_{AC}^2 = (-4)^2 + (-3)^2$

$d_{AC} = 5$

$d_{AB}^2 = (2-5)^2 + (1-5)^2$

$d_{AB}^2 = (-3)^2 + (-4)^2$

$d_{AB} = 5$

$d_{BC}^2 = (5-6)^2 + (5-4)^2$

$d_{BC}^2 = (-1)^2 + (-1)^2$

$d_{BC} = \sqrt{2}$

$P = 5 + 5 + \sqrt{2} = 10 + \sqrt{2}$

$\boxed{B(5,5) \quad C(6,4) \quad P = 10 + \sqrt{2}}$