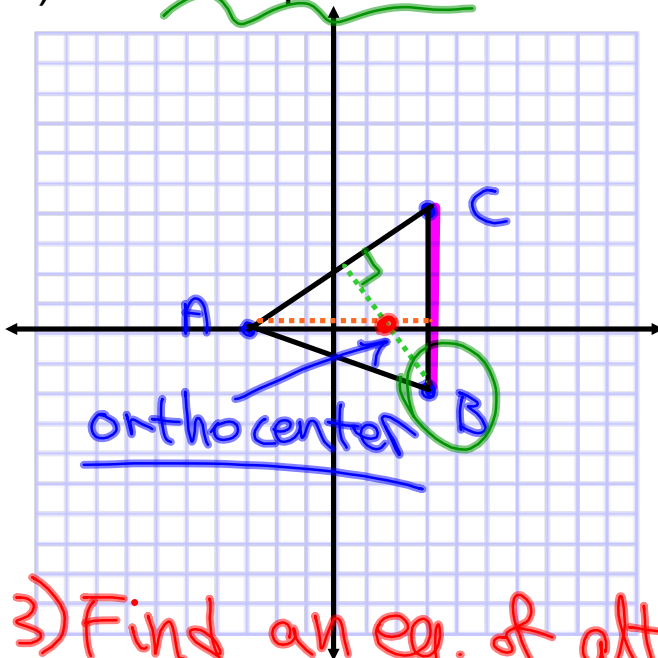


# How do we find equations for altitudes and medians?

Do Now: In Triangle ABC, A(-3, 0), B(3, -2), C(3, 4)

1) Sketch the triangle.

2) Find an equation of altitude from B to AC.



point-slope  
(3, -2)

$$y - y_1 = m(x - x_1)$$

$$m_{AC} = \frac{4-0}{3-(-3)} = \frac{2}{3}, m_{\perp} = -\frac{3}{2}$$

$$y + 2 = -\frac{3}{2}(x - 3)$$

3) Find an eq. of altitude from A.

hor. line w/ A.  $y - 0 = 0(x + 3)$

$m = 0$

$y = 0$

hor. lines  
 $y = k$

vertical lines  
 $x = k$

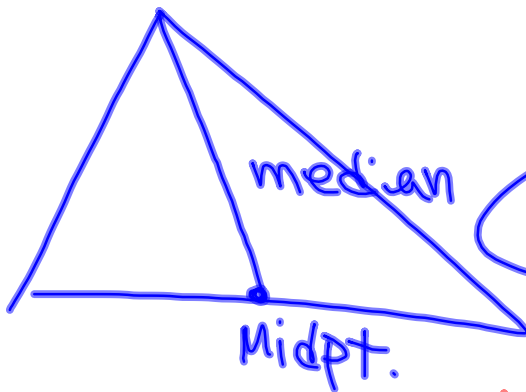
4) Find the intersection of altitudes.

$$0 + 2 = -\frac{3}{2}(x - 3)$$

$$x = \frac{5}{3} \quad \left(\frac{5}{3}, 0\right)$$

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Medians : line segments between vertices & midpts.



from Do Now

$C(3, 4)$

$A(-3, 0)$   $B(3, -2)$

$$m_{\text{mid}} = \frac{4 - (-1)}{3 - 0} = \frac{5}{3}$$

Midpt of  $\overline{AB}$

$$= \left( \frac{-3+3}{2}, \frac{0+(-2)}{2} \right)$$

$$= (0, -1)$$

eq

$$y + 1 = \frac{5}{3}(x - 0)$$

$$y = \frac{5}{3}x - 1$$

Median from pt. A.

$$y-1 = \frac{1}{6}(x-3)$$

- ① midpt.
- ② slope b/w the midpt & vertex
- ③ Find eq.