

How do we find equations of $\perp$ bisectors?

Do Now $A(0,0)$ $B(4,2)$ $C(2,10)$

1) Find an equation of $\perp$ bisector of $\overline{AB}$.
 neg. rec. midpt.

$$\text{midpt of } \overline{AB} : \left(\frac{0+4}{2}, \frac{0+2}{2} \right) = (2, 1)$$

$$m_{\overline{AB}} = \frac{2-0}{4-0} = \frac{1}{2} \quad m_{\perp} = -2$$

$$\begin{aligned} y - y_1 &= m(x - x_1) \\ y - 1 &= -2(x - 2) \end{aligned} \rightarrow \boxed{\text{pt-slope}}$$

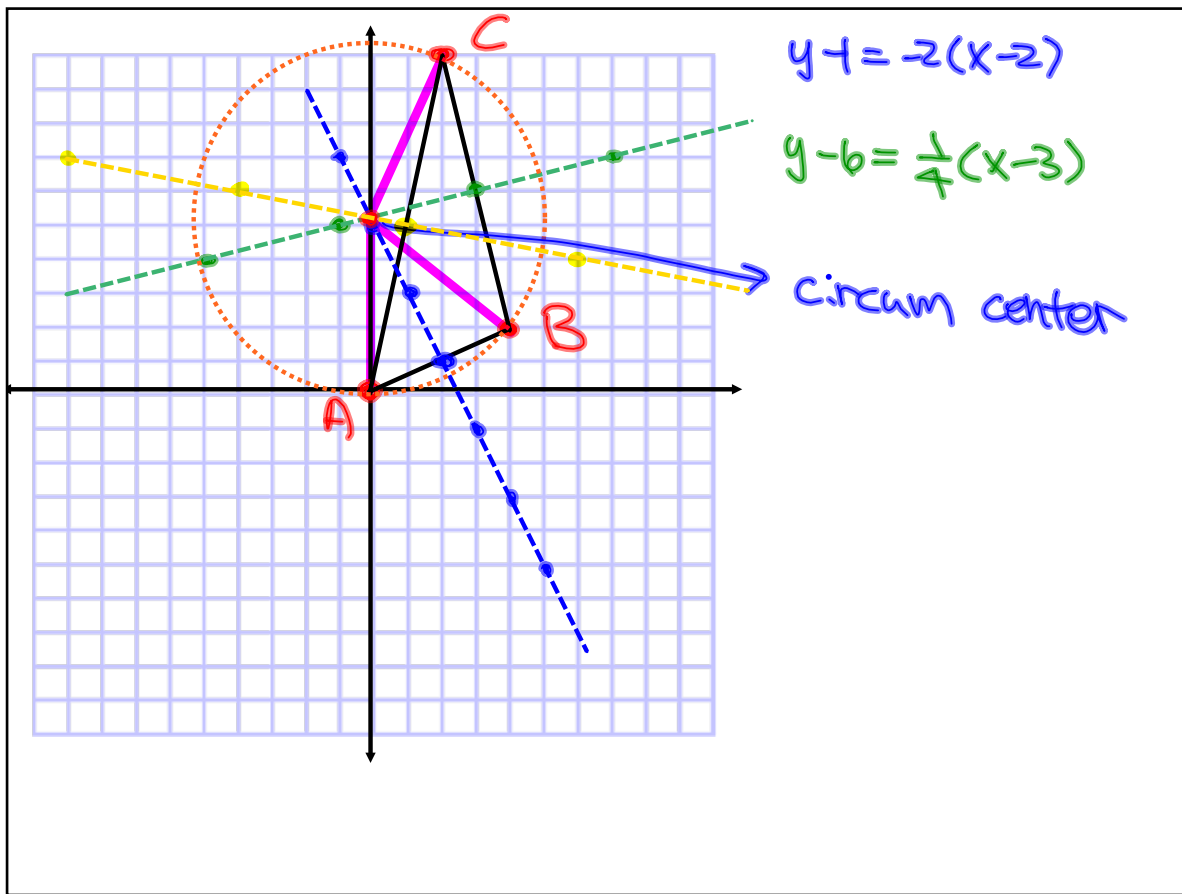
2) Find an eq. of $\perp$ bisector of $\overline{BC}$.

$$\frac{\Delta y}{\Delta x} = \frac{10-2}{2-4} = -4$$

$$\left(\frac{4+2}{2}, \frac{2+10}{2} \right)$$

$$(3, 6)$$

$$y - 6 = \frac{1}{4}(x - 3)$$



3) Find an eq. of $\perp$ bisector of $\overline{AC}$.

Slope = $\frac{\Delta y}{\Delta x}$
 $\frac{10-0}{2-0}$
 Slope = 5
 Slope = $-\frac{1}{5}$

midpoint
 $\left(\frac{2+0}{2}, \frac{0+10}{2} \right)$
 $\left(\frac{2}{2}, \frac{10}{2} \right)$
 $(1, 5)$

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

4) Find an equation of an altitude from A to $\overline{BC}$.

