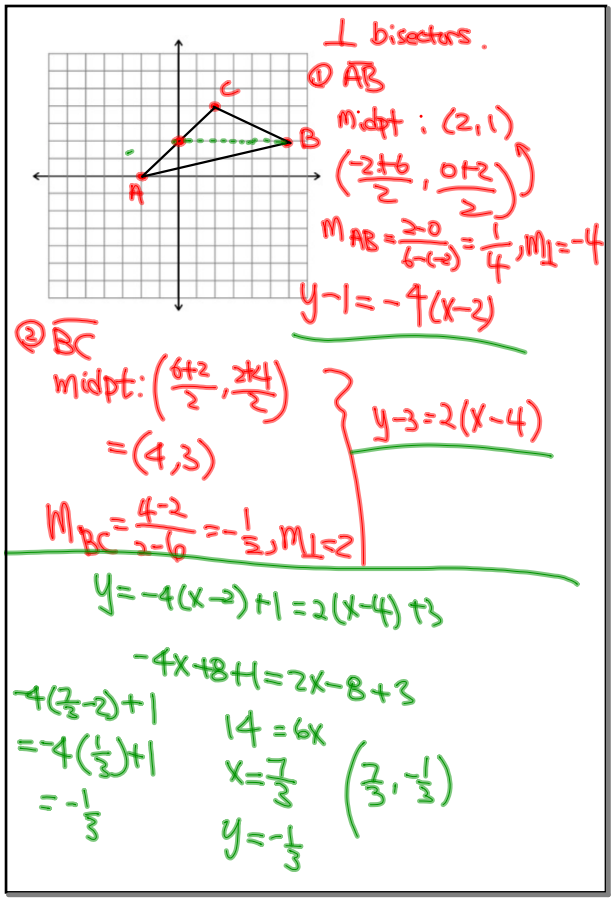
Homework RHS
Geometry RSH

Let ΔABC has its coordinates at $A(-2, 0)$, $B(6, 2)$, and $C(2, 4)$.

1. Sketch the triangle.
2. Find equations of perpendicular bisectors of $\overline{AB}$, $\overline{BC}$, and $\overline{AC}$.
3. Then, find the intersection of the perpendicular bisectors.
4. Find equations of altitudes from A, B, and C.
5. Then, find the intersection of the altitudes.
6. Find equations of medians from A, B, and C.
7. Then, find the intersection of the medians.



Altitudes

from A (-2, 0)

$m_{BC} = -\frac{1}{2}$, $m_{\perp} = 2$

$y - 0 = 2(x+2)$

from B (6, 2)

$m_{AC} = \frac{4-0}{2-(-2)} = 1$, $m_{\perp} = -1$

$y - 2 = -1(x-6)$

$y = 2(x+2) = -(x-6) + 2$

$2x + 4 = -x + 6 + 2$

$3x = 4 \quad x = \frac{4}{3}$

$y = 2(\frac{4}{3} + 2)$

$= \frac{20}{3}$

$(\frac{4}{3}, \frac{20}{3})$

Median

from A,

A(-2, 0)

Mid $\overline{BC}$ (4, 3)

$\frac{3-0}{4-(-2)} = \frac{3}{6} = \frac{1}{2}$

$y - 3 = \frac{1}{2}(x-4)$

$2 - 3 = \frac{1}{2}(x-4)$

$-1 = \frac{1}{2}(x-4)$

$-2 = (x-4)$

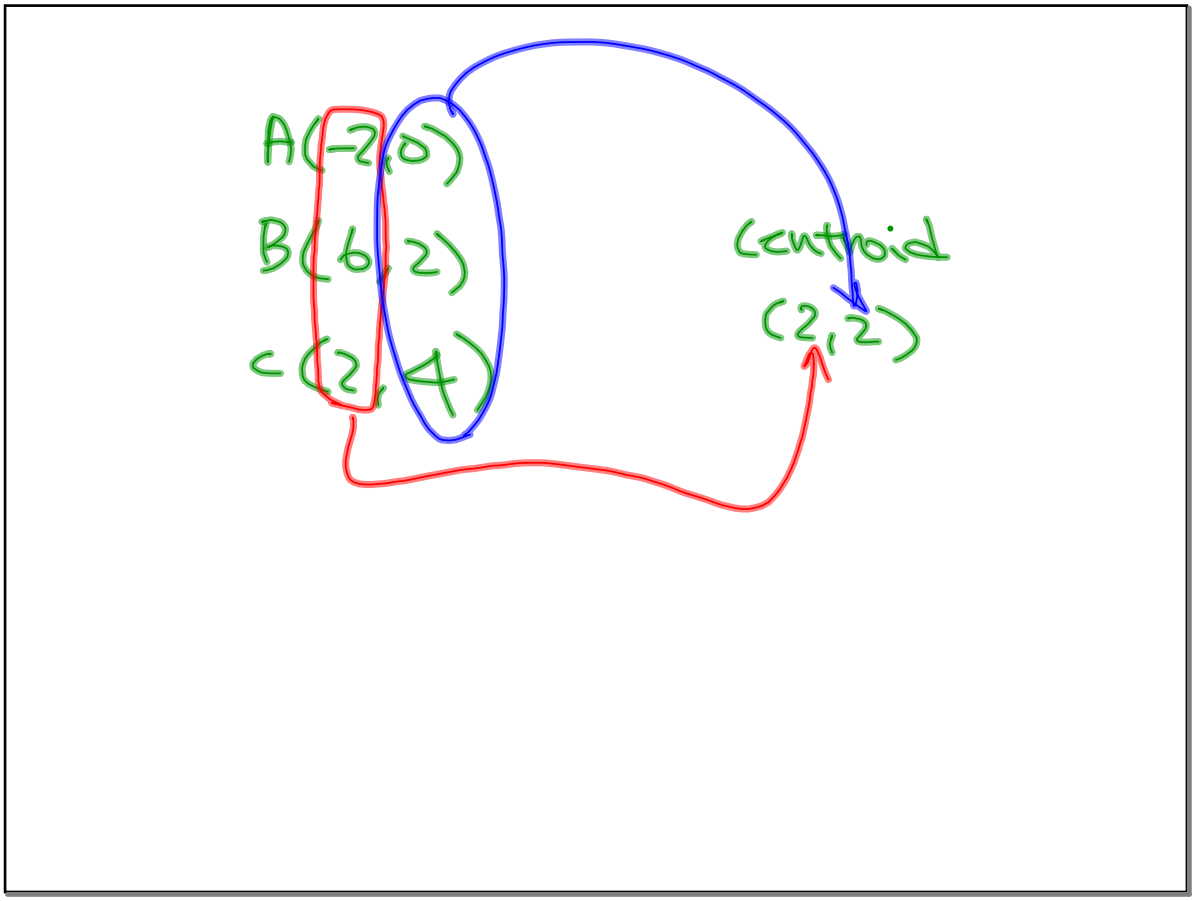
$2 = x$

from B,

midpt $\overline{AC}$: (0, 2)

Slope of $\overline{AC}$ to B: $\frac{2-2}{6-6}$ $m = 0$

$y = 2$


A(-2,0)
B(6,2)
C(2,4)
Centroid
(2,2)