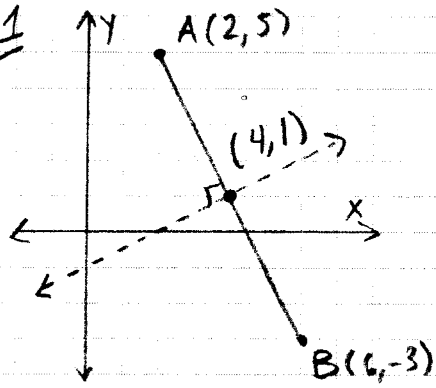
PERPENDICULAR BISECTORS

#1



$$M_{AB} = \left(\frac{2+6}{2}, \frac{5-3}{2}\right) = (4, 1)$$

$$m_{AB} = \frac{5+3}{2-6} = -2$$

$$m_\perp = \frac{1}{2}$$

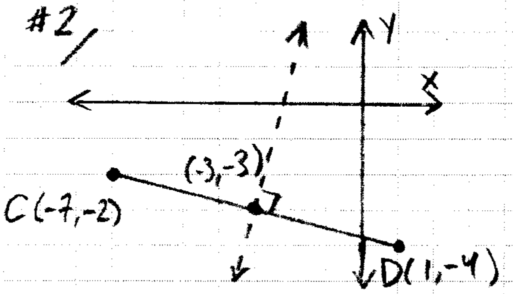
$$\therefore y = \frac{1}{2}(x-4)+1$$

$$y = \frac{1}{2}x - 2 + 1$$

$$\boxed{y = \frac{1}{2}x - 1}$$

$$\boxed{x - 2y - 2 = 0}$$

#2



$$M_{CD} = \left(\frac{-7+1}{2}, \frac{-2-4}{2}\right) = (-3, -3)$$

$$m_{CD} = \frac{-2+4}{-7-1} = -\frac{1}{4}$$

$$m_\perp = 4$$

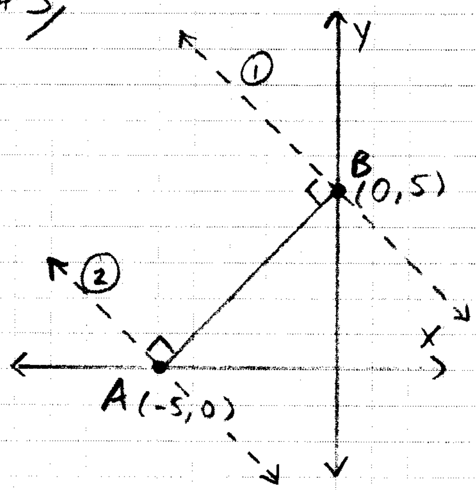
$$\therefore y = 4(x+3) - 3$$

$$y = 4x + 12 - 3$$

$$\boxed{y = 4x + 9}$$

$$\boxed{4x - y + 9 = 0}$$

#3



$$m_{AB} = \frac{5-0}{0+5} = 1$$

$$m_\perp = -1$$

① $y = -1(x-0)+5$

$y = -x + 5$

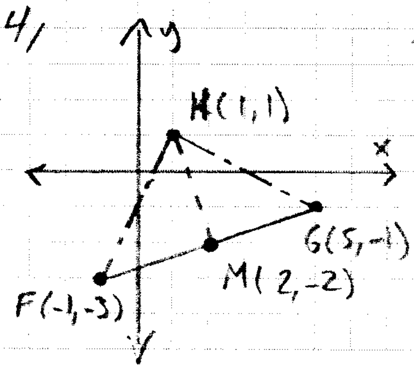
$$\boxed{x + y - 5 = 0}$$

② $y = -1(x+5)+0$

$y = -x - 5$

$$\boxed{x + y + 5 = 0}$$

#4



a) $M_{FG} = \left(\frac{-1+5}{2}, \frac{-3-1}{2}\right) = (2, -2)$

b) $l_{HM} = \sqrt{(1+2)^2 + (1-2)^2} = \sqrt{3^2 + 1^2} = \sqrt{10}$

c) $m_{FG} = \frac{1}{3}$

$m_\perp = -3$

$y = -3(x-2) - 2$

$$\boxed{y = -3x + 4}$$

con't

#4, D) $m_{HG} = \frac{1+1}{1-5}$ $\quad m_{HF} = \frac{1+3}{1+1}$

$= -\frac{1}{2}$ $\quad = 2$

$y = -\frac{1}{2}(x-1)+1$ $\quad y = 2(x-1)+1$

$y = -\frac{1}{2}x + \frac{1}{2} + 1$ $\quad y = 2x - 2 + 1$

$\boxed{y = -\frac{1}{2}x + \frac{3}{2}}$ $\quad \boxed{y = 2x - 1}$

E) $l_{HG} = \sqrt{(1+1)^2 + (1-5)^2}$ $\quad l_{HF} = \sqrt{(1+3)^2 + (1+1)^2}$

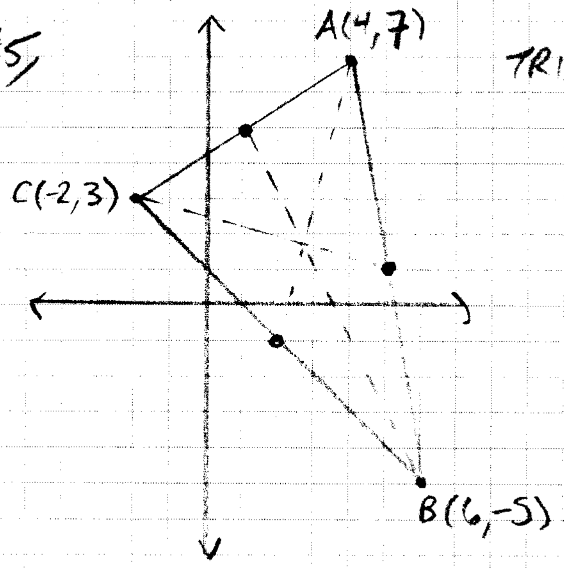
$= \sqrt{2^2 + (-4)^2}$ $\quad = \sqrt{4^2 + 2^2}$

$= \sqrt{20}$ $\quad = \sqrt{20}$

$= 2\sqrt{5}$ $\quad = 2\sqrt{5}$

THE LENGTHS OF HG AND HF ARE THE SAME.

#5,



TRIANGLES MAY VARY

THE THREE MEDIANS INTERSECT AT ONE COMMON POINT.