4.6 day 1 hw

Wednesday, May 06, 2015 7:54 AM

Section 4.6
pg 202: 1(d-f), 2, 5, 8, 9, 11, 12, 14, 17

#1d - f, 2, 8, 10, 12, 14

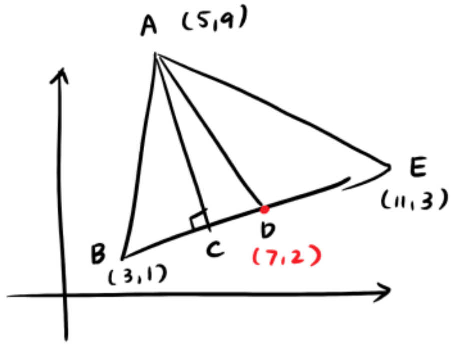
#1 d. (5,4) (-2,4) $m = \frac{4-4}{5+2} = \frac{0}{7} = \boxed{0}$

e. $(\sqrt{3}, 7)$ $(\sqrt{3}, -9)$ $m = \frac{7+9}{\sqrt{3}-\sqrt{3}} = \frac{16}{0} = \boxed{\text{undefined}}$

f. $(5a, 6c)$ $(2a, -9c)$ $m = \frac{6c+9c}{5a-2a} = \frac{15c}{3a} = \boxed{\frac{5c}{a}}$

#2 $\overleftrightarrow{AB}$ has a slope of $1\frac{2}{3}$ and $\overleftrightarrow{CD} \perp \overleftrightarrow{AB}$. Find slope of $\overleftrightarrow{CD}$

$1\frac{2}{3} = \frac{5}{3}$ $m_{CD} = \boxed{\frac{-3}{5}}$



#5 $\overline{AC}$ is an altitude
$\overline{AD}$ is a median
Find the Slope of.

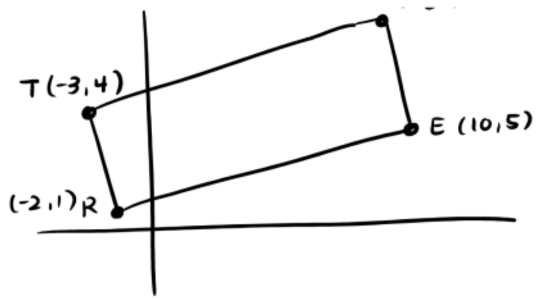
a. $\overleftrightarrow{BE}$ (3,1) (11,3) $m = \frac{3-1}{11-3} = \frac{2}{8} = \boxed{\frac{1}{4}}$

b. $\overleftrightarrow{AC}$ $= -\frac{4}{1} = \boxed{-4}$ (opposite reciprocal - $\perp$)

c $\overleftrightarrow{AD}$ D: $\left(\frac{3+11}{2}, \frac{1+3}{2}\right)$: (7, 2) (5,9) (7,2) $m = \frac{9-2}{5-7} = \boxed{\frac{7}{-2}}$

d A line through A and parallel to $\overline{BE}$ $\frac{1}{4}$ (same slope

#8 a. Is $\overline{RE}$ parallel to TC



$m_{RE} = \frac{5-1}{10+2} = \frac{4}{12} = \boxed{\frac{1}{3}}$

(-2,1)
(10,5)

$m_{TC} = \frac{8-4}{9+3} = \frac{4}{12} = \boxed{\frac{1}{3}}$

(-3,4)
(9,8)

YES! Same slope

b. Is $\overleftrightarrow{TR}$ parallel to $\overleftrightarrow{CE}$

$m_{TR} = \frac{4-1}{-3+2} = \frac{3}{-1} = \boxed{-3}$

(-3,4)
(-2,1)

$m_{CE} = \frac{8-5}{9-10} = \frac{3}{-1} = \boxed{-3}$

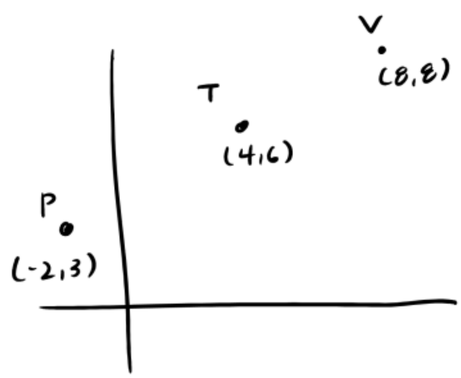
(9,8)
(10,5)

YES! Same slope

c. Show that ∡R is a right ∡

$\left.\begin{array}{l} m_{TR} = -3 \\ m_{RE} = \frac{1}{3} \end{array}\right\}$ opposite reciprocals ∴ perpendicular + right ∡

#9



a. Find the slope of $\overleftrightarrow{PT}$

$m_{PT} = \frac{6-3}{4+2} = \frac{3}{6} = \boxed{\frac{1}{2}}$

(-2,3)
(4,6)

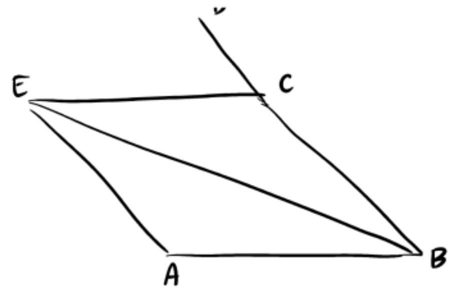
b. Find the slope of $\overleftrightarrow{TV}$

$m_{TV} = \frac{8-6}{8-4} = \frac{2}{4} = \boxed{\frac{1}{2}}$

(4,6)
(8,8)

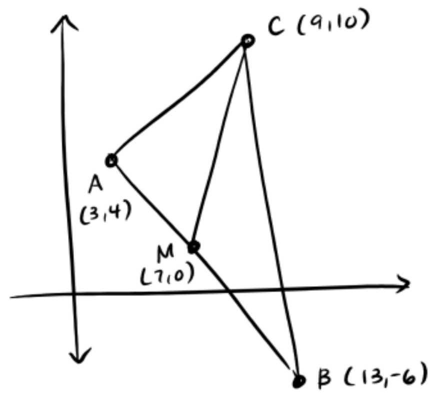
c. Are P, T, and V collinear YES!

#11 a. For EC and AB, a pair of corresponding angles are $\measuredangle ABC$ and $\underline{\measuredangle ECD}$



b. For $\overleftrightarrow{EC}$ and $\overleftrightarrow{AB}$, a pair of alt. int angles are $\measuredangle ABE$ and $\underline{\measuredangle CEB}$

#12 Show that $\overline{CM}$ is not the median to $\overline{AB}$



$$\text{midpt } AB = \left(\frac{3+13}{2}, \frac{4-6}{2}\right)$$

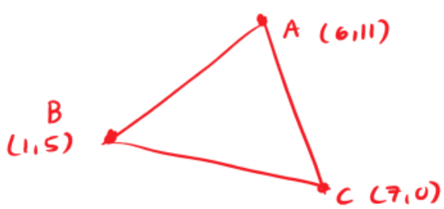
$$= (8,-1)$$

so M is NOT the midpt

#14 If A = (6,11)
B = (1,5)
C = (7,0)

Show that $\triangle ABC$ is a right $\triangle$.

Name the hypotenuse



$$m_{AB} = \frac{11-5}{6-1} = \frac{6}{5}$$

$$m_{BC} = \frac{5-0}{1-7} = \frac{5}{-6}$$

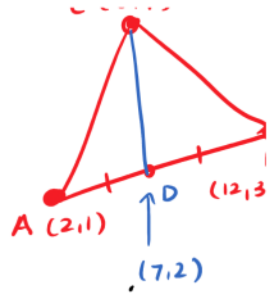
opposite reciprocals → $\measuredangle B$ is a $\llcorner$

$\boxed{\overline{AC} \text{ is the hypotenuse}}$

$$m_{AC} = \frac{11-0}{6-7} = \frac{11}{-1}$$

#17 $\triangle ABC$ has vertices $A = (2,1)$
$B = (12,3)$
$C = (6,7)$

Write an argument to show that the median from C to $\overline{AB}$ is not longer than the altitude from C to $\overline{AB}$



$$\text{midpt } \overline{AB} = \left(\frac{2+12}{2}, \frac{1+3}{2}\right)$$
$$= (7,2)$$

$$m_{AB} = \frac{3-1}{12-2} = \frac{2}{10} = \frac{1}{5}$$
(2,1)
(12,3)

$$m_{CD} = \frac{7-2}{6-7} = \frac{5}{-1} = \boxed{-5}$$
(6,7)
(7,2)

$\therefore$ $\overline{AB} \perp \overline{CD}$
and the altitude passes through the midpt
(altitude + median are the same)