

$$AT = 5 - 0$$

$$BT = 4 - 1$$

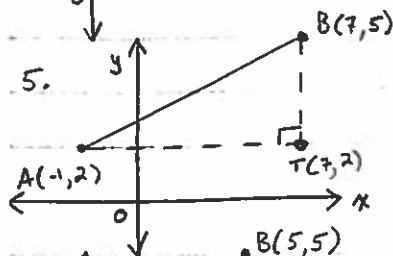
$$AB = \sqrt{(5-0)^2 + (4-1)^2}$$

$$AT = 5$$

$$BT = 3$$

$$AB = \sqrt{5^2 + 3^2}$$

$$AB = \sqrt{34}$$



$$AT = 7 - (-1)$$

$$BT = 5 - 2$$

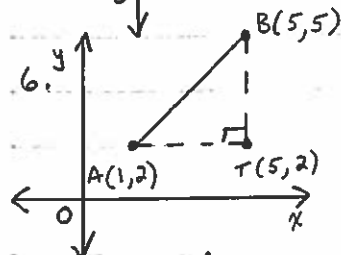
$$AB = \sqrt{(7-(-1))^2 + (5-2)^2}$$

$$AT = 8$$

$$BT = 3$$

$$AB = \sqrt{8^2 + 3^2}$$

$$AB = \sqrt{73}$$



$$AT = 5 - 1$$

$$BT = 5 - 2$$

$$AB = \sqrt{(5-1)^2 + (5-2)^2}$$

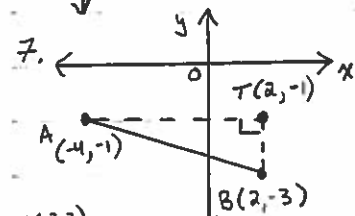
$$AT = 4$$

$$BT = 3$$

$$AB = \sqrt{4^2 + 3^2}$$

$$AB = \sqrt{25}$$

$$AB = 5$$



$$AT = 2 - (-4)$$

$$BT = -1 - (-3)$$

$$AB = \sqrt{(2-(-4))^2 + (-1-(-3))^2}$$

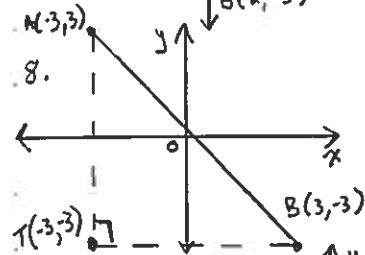
$$AT = 6$$

$$BT = 2$$

$$AB = \sqrt{6^2 + 2^2}$$

$$AB = \sqrt{40}$$

$$AB = 2\sqrt{10}$$



$$AT = 3 - (-3)$$

$$BT = 3 - (-3)$$

$$AB = \sqrt{(3-(-3))^2 + (3-(-3))^2}$$

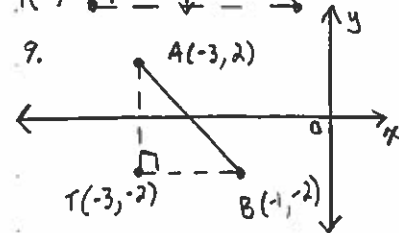
$$AT = 6$$

$$BT = 6$$

$$AB = \sqrt{6^2 + 6^2}$$

$$AB = \sqrt{72}$$

$$AB = 6\sqrt{2}$$



$$AT = 2 - (-2)$$

$$BT = -1 - (-3)$$

$$AB = \sqrt{(-1-(-3))^2 + (2-(-2))^2}$$

$$AT = 4$$

$$BT = 2$$

$$AB = \sqrt{2^2 + 4^2}$$

$$AB = \sqrt{20}$$

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

10.

a. $(0,0)$ $(5,-3)$

$$d = \sqrt{(5-0)^2 + (-3-0)^2}$$

$$d = \sqrt{5^2 + (-3)^2}$$

$$d = \sqrt{25+9}$$

$$d = \sqrt{34}$$

b. $(3,-2)$ $(-5,-2)$

$$d = 3 - (-5) \text{ [Horizontal Segment]}$$

$$d = 8$$

c. $(4,4)$ $(-3,-3)$

$$d = \sqrt{(4-(-3))^2 + (4-(-3))^2}$$

$$d = \sqrt{7^2 + 7^2}$$

$$d = \sqrt{49+49}$$

$$d = \sqrt{98}$$

$$d = 7\sqrt{2}$$

(P+I) p. 526-527 WE # 1-12, 27, 28

1. $(-2, -3) (-2, 4)$
 $d = 4 - (-3)$ [Vertical Segment]
 $d = 7$

2. $(3, 3) (-2, 3)$
 $d = 3 - (-2)$ [Horizontal Segment]
 $d = 5$

3. $(3, -4) (-1, -4)$
 $d = 3 - (-1)$ [Horizontal Segment]
 $d = 4$

4. $(0, 0) (3, 4)$
 $d = \sqrt{(3-0)^2 + (4-0)^2}$
 $d = \sqrt{9+16}$
 $d = \sqrt{25}$
 $d = 5$

5. $(-6, -2) (-7, -5)$
 $d = \sqrt{(-6-(-7))^2 + (-2-(-5))^2}$
 $d = \sqrt{1^2 + 3^2}$
 $d = \sqrt{10}$

6. $(3, 2) (5, -2)$
 $d = \sqrt{(5-3)^2 + (2-(-2))^2}$
 $d = \sqrt{2^2 + 4^2}$
 $d = \sqrt{20}$
 $d = 2\sqrt{5}$

7. $(-8, 6) (0, 0)$
 $d = \sqrt{(0-(-8))^2 + (6-0)^2}$
 $d = \sqrt{8^2 + 6^2}$
 $d = \sqrt{64+36}$
 $d = \sqrt{100}$
 $d = 10$

8. $(12, -1) (0, -6)$
 $d = \sqrt{(12-0)^2 + (-1-(-6))^2}$
 $d = \sqrt{12^2 + 5^2}$
 $d = \sqrt{144+25}$
 $d = \sqrt{169}$
 $d = 13$

9. $(5, 4) (1, -2)$
 $d = \sqrt{(5-1)^2 + (4-(-2))^2}$
 $d = \sqrt{4^2 + 6^2}$
 $d = \sqrt{16+36}$
 $d = \sqrt{52}$
 $d = 2\sqrt{13}$

10. $(-2, -2) (5, 7)$
 $d = \sqrt{(5-(-2))^2 + (7-(-2))^2}$
 $d = \sqrt{7^2 + 9^2}$
 $d = \sqrt{49+81}$
 $d = \sqrt{130}$

11. $(-2, 3) (3, -2)$
 $d = \sqrt{(3-(-2))^2 + (3-(-2))^2}$
 $d = \sqrt{5^2 + 5^2}$
 $d = \sqrt{25+25}$
 $d = \sqrt{50}$
 $d = 5\sqrt{2}$

12. $(-4, -1) (-4, 3)$
 $d = 3 - (-1)$ [Vertical Segment]
 $d = 4$

27. $A(-3, 4) M(3, 1) Y(0, -2)$
 $AM = \sqrt{(3-(-3))^2 + (4-1)^2}$
 $AM = \sqrt{6^2 + 3^2}$
 $AM = \sqrt{45}$
 $AM = 3\sqrt{5}$
 $AY = \sqrt{(0-(-3))^2 + (4-(-2))^2}$
 $AY = \sqrt{3^2 + 6^2}$
 $AY = \sqrt{45}$
 $AY = 3\sqrt{5}$

$\overline{AM} \cong \overline{AY}$
 [Def. of \cong seg]
 Therefore $\triangle AMO$
 is isosceles
 by the def. of
 isosceles \triangle .

Quadrilateral TAUL \rightarrow Diagonals $\overline{TU} + \overline{AL}$
 28. $T(4, 6) A(6, -4) U(-4, -2) L(-2, 4)$
 $TU = \sqrt{(4-(-4))^2 + (6-(-2))^2}$
 $TU = \sqrt{8^2 + 8^2}$
 $TU = \sqrt{128}$
 $TU = 8\sqrt{2}$
 $AL = \sqrt{(6-(-2))^2 + (4-(-4))^2}$
 $AL = \sqrt{8^2 + 8^2}$
 $AL = \sqrt{128}$
 $AL = 8\sqrt{2}$

$\overline{TU} \cong \overline{AL}$
 [Def. of \cong seg]
 Therefore the
 diagonals
 are \cong .

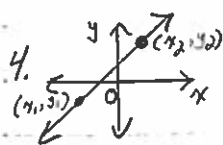
A#39 continued

Key

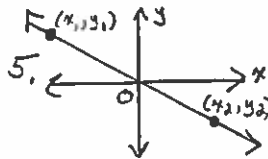
P+II p. 529-533 CE#1-6 and WE#3-15
 p. 536-537 CE#1-9 and WE#7-10

CE 1. $m = \frac{\Delta y}{\Delta x} = \frac{2-1}{3-(-2)} = \frac{1}{5}$ 2. $m = \frac{\Delta y}{\Delta x} = \frac{-2-(-2)}{4-(-3)} = \frac{0}{7} = 0$ 3. $m = \frac{\Delta y}{\Delta x} = \frac{2-0}{0-2} = \frac{2}{-2} = -1$

$m = \frac{1}{5}$ $m = 0$ $m = -1$



4. a. $y_2 - y_1$ - Positive
 b. $x_2 - x_1$ - Positive
 c. $\frac{y_2 - y_1}{x_2 - x_1}$ - Positive



5. a. $y_2 - y_1$ - Negative
 b. $x_2 - x_1$ - Positive
 c. $\frac{y_2 - y_1}{x_2 - x_1}$ - Negative

6. a. Positive slope
 b. Undefined slope
 c. Negative slope
 d. Zero slope

WE 3. $(1, 2) (3, 4)$ 4. $(1, 2) (-2, -5)$ 5. $(1, 2) (-2, 5)$ 6. $(0, 0) (5, 1)$

$m = \frac{\Delta y}{\Delta x} = \frac{4-2}{3-1} = \frac{2}{2} = 1$ $m = \frac{\Delta y}{\Delta x} = \frac{-2-(-5)}{1-(-2)} = \frac{3}{3} = 1$ $m = \frac{\Delta y}{\Delta x} = \frac{5-2}{-2-1} = \frac{3}{-3} = -1$ $m = \frac{\Delta y}{\Delta x} = \frac{1-0}{5-0} = \frac{1}{5}$

$m = 1$ $m = 1$ $m = -1$ $m = \frac{1}{5}$

7. $(7, 2) (2, 7)$ 8. $(3, 3) (3, 7)$ 9. $(6, -6) (-6, -6)$ 10. $(6, -6) (4, 3)$

$m = \frac{\Delta y}{\Delta x} = \frac{7-2}{2-7} = \frac{5}{-5} = -1$ $m = \frac{\Delta y}{\Delta x} = \frac{7-3}{3-3} = \frac{4}{0}$ $m = \frac{\Delta y}{\Delta x} = \frac{-6-(-6)}{6-(-6)} = \frac{0}{12} = 0$ $m = \frac{\Delta y}{\Delta x} = \frac{3-(-6)}{4-6} = \frac{9}{-2} = -\frac{9}{2}$

$m = -1$ m is undefined $m = 0$ $m = -\frac{9}{2}$

11. $(-4, -3) (-6, -6)$ 12. A(3, -1) B(5, -7)

$m = \frac{\Delta y}{\Delta x} = \frac{-3-(-6)}{-4-(-6)} = \frac{3}{2}$ $m \text{ of } \overline{AB} = \frac{\Delta y}{\Delta x} = \frac{-1-(-7)}{3-5} = \frac{6}{-2} = -3$

$m = \frac{3}{2}$ $m \text{ of } \overline{AB} = -3$

$AB = \sqrt{(-1-(-7))^2 + (5-3)^2}$
 $AB = \sqrt{6^2 + 2^2}$
 $AB = \sqrt{40}$
 $AB = 2\sqrt{10}$

13. A(-3, -2) B(7, -6)

$m \text{ of } \overline{AB} = \frac{\Delta y}{\Delta x} = \frac{-2-(-6)}{-3-7} = \frac{4}{-10} = -\frac{2}{5}$

$m \text{ of } \overline{AB} = -\frac{2}{5}$

$AB = \sqrt{(7-(-3))^2 + (-2-(-6))^2}$
 $AB = \sqrt{10^2 + 4^2}$
 $AB = \sqrt{116}$
 $AB = 2\sqrt{29}$

14. A(8, -7) B(-3, -5)

$m \text{ of } \overline{AB} = \frac{\Delta y}{\Delta x} = \frac{-5-(-7)}{-3-8} = \frac{2}{-11} = -\frac{2}{11}$

$m \text{ of } \overline{AB} = -\frac{2}{11}$

$AB = \sqrt{(8-(-3))^2 + (-5-(-7))^2}$
 $AB = \sqrt{11^2 + 2^2}$
 $AB = \sqrt{125} \rightarrow AB = 5\sqrt{5}$

15. A(0, -9) B(8, -3)

$m \text{ of } \overline{AB} = \frac{\Delta y}{\Delta x} = \frac{-3-(-9)}{8-0} = \frac{6}{8} = \frac{3}{4}$

$m \text{ of } \overline{AB} = \frac{3}{4}$

$AB = \sqrt{(8-0)^2 + (-3-(-9))^2}$
 $AB = \sqrt{8^2 + 6^2}$
 $AB = \sqrt{100}$
 $AB = 10$

A#39 continued

Key

WE II p. 536-537 CE #1-9 and WE #7-10

CE 1. $\perp \rightarrow$ opposite reciprocal slopes

a. $2 \rightarrow \boxed{-\frac{1}{2}}$ b. $\frac{4}{5} \rightarrow \boxed{-\frac{5}{4}}$ c. $-4 \rightarrow \boxed{\frac{1}{4}}$ d. Undefined $\rightarrow \boxed{0}$

e. $0 \rightarrow \boxed{\text{Undefined}}$

2. $\frac{3}{4}; \frac{12}{16} = \frac{3}{4}$ 3. $1; -1$ 4. $3; -3$ 5. $-\frac{3}{4}; \frac{4}{3}$

$\boxed{\text{Parallel}}$

$\boxed{\perp}$

$\boxed{\text{Neither}}$

$\boxed{\perp}$

6. $3; -\frac{1}{3}$ 7. $-\frac{2}{3}; -\frac{2}{3}$ 8. $0; -1$ 9. $\frac{5}{6}; \frac{6}{5}$

$\boxed{\perp}$

$\boxed{\text{Parallel}}$

$\boxed{\text{Neither}}$

$\boxed{\text{Neither}}$

WE 7. $A(0,0) B(7,3) C(2,-5)$

* Altitudes are \perp to the opposite sides.

$m \text{ of } \overline{AB} = \frac{\Delta y}{\Delta x} = \frac{3-0}{7-0} = \frac{3}{7}$

$m \text{ of } \overline{BC} = \frac{\Delta y}{\Delta x} = \frac{3-(-5)}{7-2} = \frac{8}{5}$

$\boxed{m \text{ of } \overline{AB} = \frac{3}{7}}$

$\boxed{m \text{ of Altitude} = -\frac{7}{3}}$

$\boxed{m \text{ of } \overline{BC} = \frac{8}{5}}$

$\boxed{m \text{ of Altitude} = -\frac{5}{8}}$

$m \text{ of } \overline{AC} = \frac{\Delta y}{\Delta x} = \frac{-5-0}{2-0} = -\frac{5}{2}$

$\boxed{m \text{ of } \overline{AC} = -\frac{5}{2}}$

$\boxed{m \text{ of Altitude} = -\frac{2}{5}}$

8. $A(1,4) B(-1,-3) C(4,-5)$

$m \text{ of } \overline{AB} = \frac{\Delta y}{\Delta x} = \frac{4-(-3)}{1-(-1)} = \frac{7}{2}$

$m \text{ of } \overline{BC} = \frac{\Delta y}{\Delta x} = \frac{-3-(-5)}{-1-4} = \frac{2}{-5}$

$\boxed{m \text{ of } \overline{AB} = \frac{7}{2}}$

$\boxed{m \text{ of Altitude} = -\frac{2}{7}}$

$\boxed{m \text{ of } \overline{BC} = -\frac{2}{5}}$

$\boxed{m \text{ of Altitude} = \frac{5}{2}}$

$m \text{ of } \overline{AC} = \frac{\Delta y}{\Delta x} = \frac{4-(-5)}{1-4} = \frac{9}{-3}$

$\boxed{m \text{ of } \overline{AC} = -3}$

$\boxed{m \text{ of Altitude} = \frac{1}{3}}$

9. $R(-3,-4) S(2,2) T(14,-8)$ * The legs of a rt. Δ are \perp .

$m \text{ of } \overline{RS} = \frac{\Delta y}{\Delta x} = \frac{2-(-4)}{2-(-3)} = \frac{6}{5}$ $m \text{ of } \overline{ST} = \frac{\Delta y}{\Delta x} = \frac{2-(-8)}{2-14} = \frac{10}{-12}$

$m \text{ of } \overline{RS} = \frac{6}{5}$

$m \text{ of } \overline{ST} = -\frac{5}{6}$

Since they have opp. reciprocal slopes, $\overline{RS} \perp \overline{ST}$.

Therefore ΔRST is a right Δ with right $\angle S$.

10. $R(-1,1) S(2,4) T(5,1)$

$m \text{ of } \overline{RS} = \frac{\Delta y}{\Delta x} = \frac{4-1}{2-(-1)} = \frac{3}{3}$ $m \text{ of } \overline{ST} = \frac{\Delta y}{\Delta x} = \frac{4-1}{2-5} = \frac{3}{-3}$

$m \text{ of } \overline{RS} = 1$

$m \text{ of } \overline{ST} = -1$

Since they have opp. reciprocal slopes, $\overline{RS} \perp \overline{ST}$.

Therefore ΔRST is a right Δ with right $\angle S$.