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Example 1:

A triangle has vertices A(-5, 1), B(3, 2) and C(-3, -2). Determine whether it is a right triangle.

$$m_{AB} = \frac{2-1}{3-(-5)} = \frac{1}{8}$$

$$m_{BC} = \frac{-2-2}{-3-3} = \frac{-4}{-6} = \frac{2}{3}$$

$$m_{CA} = \frac{-2-1}{-3-(-5)} = \frac{-3}{2} \text{ or } \frac{3}{-2}$$

Yes it is a right Δ because $\frac{2}{3}$ and $\frac{-3}{2}$ are the negative reciprocal of each other and form a right \angle .

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Example 2:
A line segment has endpoints A(-2, 3) and B(8, -3)

- a) Determine the coordinates of point C so that line segment \overline{AC} is perpendicular to \overline{AB}

$$m\overline{AB} = \frac{-3-3}{8-(-2)} = \frac{-6}{10} = -\frac{3}{5}$$

$$m\overline{AC} = \frac{5 \text{ rise}}{3 \text{ run}}$$

- b) What are the coordinates of C when C is on the x-axis?

$$m\overline{AC} = \frac{5}{3} \quad A(-2, 3)$$

$$\frac{5}{3} = \frac{0-3}{x-(-2)}$$

$$\frac{5}{3} = \frac{-3}{x+2}$$

$$5(x+2) = 3(-3)$$

$$5x + 10 = -9$$

$$\frac{5x}{5} = \frac{-19}{5}$$

$$x = -\frac{19}{5}$$

$$x = -3.8$$

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Assignment: Pg. 187

1, 3, 7ac, 8a, 11 odds, 12 ac

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