The Distance Formula

$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

1. Find the distance between each pair of points.

a) $\overset{x_1\ y_1}{(10,1)}$ and $\overset{x_2\ y_2}{(2,8)}$

$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

$d = \sqrt{(2-10)^2 + (8-1)^2}$

$d = \sqrt{(-8)^2 + (7)^2}$

$d = \sqrt{64+49}$

$d = \sqrt{113}$

$\boxed{d = 10.6}$

b) $\overset{x_1\ y_1}{(-1,-5)}$ and $\overset{x_2\ y_2}{(3,-3)}$

$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

$d = \sqrt{(3--1)^2 + (-3--5)^2}$

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

$d = \sqrt{16+4}$

$d = \sqrt{20}$

$\boxed{d = 4.5 \text{ OR } 2\sqrt{5}}$

$\sqrt{20}$

2 10

2 5

$\sqrt{2 \cdot 2 \cdot 5}$

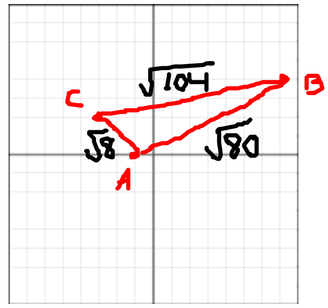
$2\sqrt{5}$

2. Determine whether ΔABC is a right triangle with vertices:

A (-1, 0)

B (7, 4)

C (-3, 2)



$x_1\ y_1\quad x_2\ y_2$

$\overline{AB}$: $(-1,0)(7,4)$

$d = \sqrt{(x_2-x_1)^2 + (y_2-y_1)^2}$

$d = \sqrt{(7--1)^2 + (4-0)^2}$

$d = \sqrt{8^2 + 4^2}$

$d = \sqrt{64+16}$

$d = \sqrt{80}$

$x_1\ y_1\quad x_2\ y_2$

$\overline{AC}$: $(-1,0)(-3,2)$

$d = \sqrt{(-3--1)^2 + (2-0)^2}$

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

$d = \sqrt{4+4}$

$d = \sqrt{8}$

$x_1\ y_1\quad x_2\ y_2$

$\overline{BC}$: $(7,4)(-3,2)$

$d = \sqrt{(-3-7)^2 + (2-4)^2}$

$d = \sqrt{(-10)^2 + (-2)^2}$

$d = \sqrt{100+4}$

$d = \sqrt{104}$

$a^2 + b^2 = c^2$

$a = \sqrt{8}\quad b = \sqrt{80}\quad c = \sqrt{104}$

$(\sqrt{8})^2 + (\sqrt{80})^2 = (\sqrt{104})^2$

$8 + 80 = 104$

$88 \neq 104$

$\boxed{\Delta ABC \text{ is Not a right } \Delta}$