HW

Exercise 7.1

1. (i) (2,3), (4,1) (ii) (-5,7), (-1,3) (iii) (a,b), (-a,-b)

$x_1 = 2$ $y_1 = 3$ $x_1 = -5$ $y_1 = 7$ $x_1 = a$ $y_1 = b$

$x_2 = 4$ $y_2 = 1$ $x_2 = -1$ $y_2 = 3$ $x_2 = -a$ $y_2 = -b$

$\Rightarrow \sqrt{(x_2-x_1)^2+(y_2-y_1)^2}$ $\Rightarrow \sqrt{(x_2-x_1)+(y_2-y_1)}$ $\Rightarrow \sqrt{(x_2-x_1)^2+(y^2-y')^2}$

$\Rightarrow \sqrt{(4-2)^2+(1-3)^2}$ $\Rightarrow \sqrt{(-1+5)^2+(3-7)^2}$ $\Rightarrow \sqrt{(a-a)^2+(-b-b)^2}$

$\Rightarrow \sqrt{(2)^2+(-2)^2}$ $\Rightarrow \sqrt{(4)^2+(4)^2}$ $= \sqrt{4a^2+4b^2}$

$\Rightarrow \sqrt{4+4}$ $\Rightarrow \sqrt{16+16} = \sqrt{32}$ $= \sqrt{4(a^2+b^2)}$

$= \sqrt{8} = \sqrt{2 \times 2 \times 2} = 2\sqrt{2}$ $\Rightarrow \sqrt{32} = 4\sqrt{2}$ $= 2\sqrt{a^2+b^2}$

2. (0,0) (36,15)

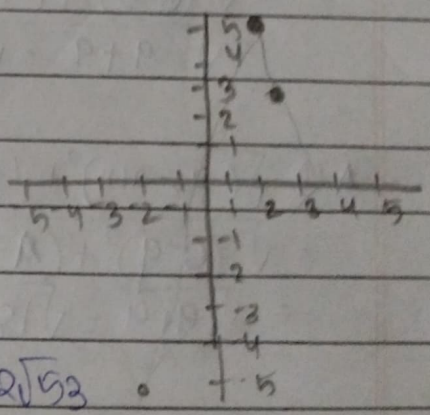
Distance $= \sqrt{(x^2-x')^2+(y^2-y')^2}$

$= \sqrt{(36-0)^2+(15-0)^2}$

$= \sqrt{(36)^2+(15)^2}$

$= \sqrt{1296+255} = \sqrt{1521} = 39$ units

3. A(1,5), B(2,3), C(-2,-11)



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

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

$BC = \sqrt{(-2-2)^2+(-11-3)^2}$

$= \sqrt{(-4)^2+(-14)^2} = \sqrt{16+196} = \sqrt{212} = 2\sqrt{53}$

$CA = \sqrt{(-2-1)^2+(-11-5)^2}$

$= \sqrt{(-3)^2+(-16)^2} = \sqrt{9+256} = \sqrt{265}$

$AB + BC \neq CA$ hence not collinear

4. A(5, -2) B(6, 4) C(7, -2)

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

$= \sqrt{(6-5)^2 + (4+2)^2}$

$= \sqrt{1+36} = \sqrt{37}$

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

$= \sqrt{(7-6)^2 + (-2-4)^2}$

$= \sqrt{1+36} = \sqrt{37}$

$AC = \sqrt{(x_2-x_1)^2 + (y-y_1)^2}$

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

$= \sqrt{(2)^2} = 4$

As $AB = BC$ therefore it is an isosceles triangle.