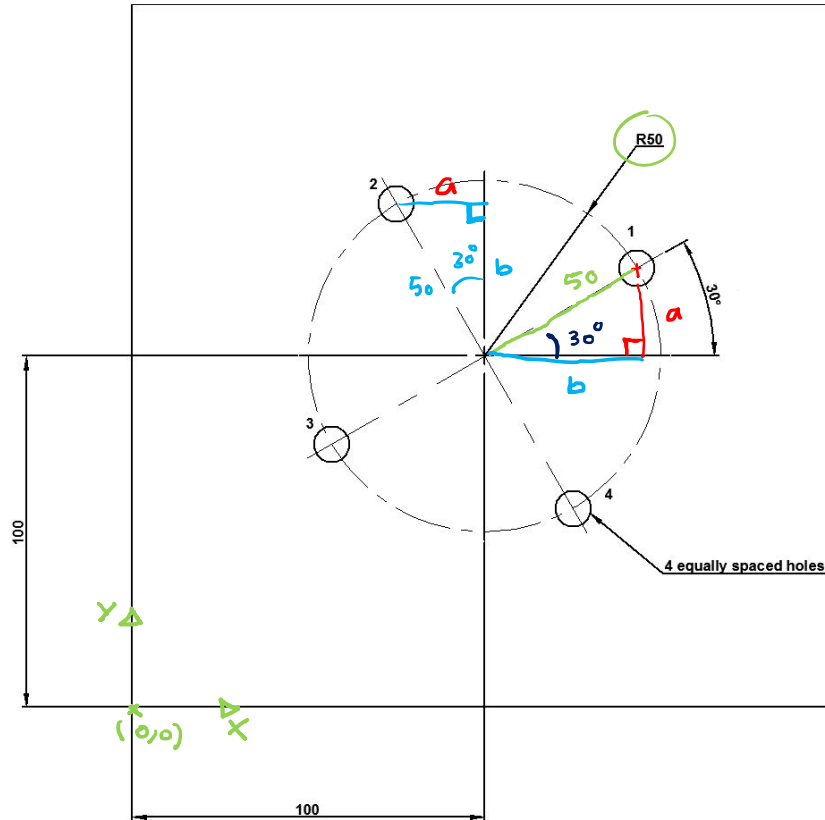




3- Find the absolute X and Y coordinates that must be input for drilling hole 2 shown in Figure 1-2. [Hint: use right-triangle to find the X and Y]

$$\sin \theta = \frac{\text{OPP}}{\text{Hyp}}$$
$$\cos \theta = \frac{\text{adj}}{\text{Hyp}}$$
$$\tan \theta = \frac{\text{OPP}}{\text{adj}}$$

FIGURE 1-2



$$30^\circ * \frac{\pi}{180^\circ} = 0.523 \text{ — } \square$$

a

$$\frac{\sin \theta}{1} = \frac{\text{OPP}}{\text{Hyp}} = \frac{a}{50} \Rightarrow a = 50 \sin \theta = 50 \sin(30^\circ) = 25 \text{ — } \square$$

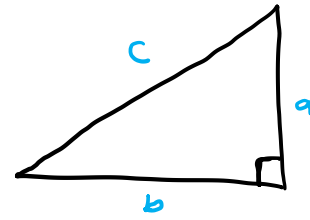
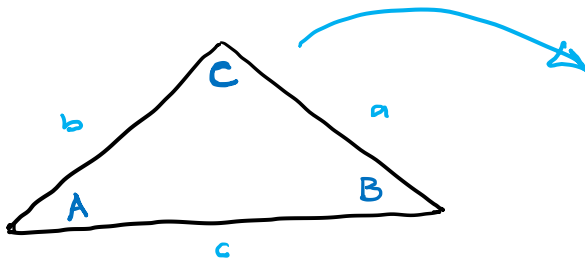
b

$$\cos \theta = \frac{\text{adj}}{\text{Hyp}} = \frac{b}{50} \Rightarrow b = 50 \cos(30^\circ) = 43.3 \text{ — } \square$$

Holes : (x, y)

$$X = 100 + b = 100 + 43.3 = 143.3 \text{ — } \square$$

$$Y = 100 + a = 125 \text{ — } \square$$



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

law of cosines:

$$c^2 = a^2 + b^2 - 2ab \cos C$$
$$b^2 = a^2 + c^2 - 2ac \cos B$$
$$a^2 = b^2 + c^2 - 2bc \cos A$$

law of sines:

$$\frac{\sin A}{a} = \frac{\sin B}{b} = \frac{\sin C}{c}$$