

م 2. $b=8.2\text{cm}$, $c=5.1\text{cm}$, $A=70^\circ$

$a=?$, $B=?$, $C=?$ ←

$$a^2 = b^2 + c^2 - 2bc \cos A$$

$$\rightarrow a^2 = 8.2^2 + 5.1^2 - 2 * 8.2 * 5.1 * \cos 70$$

$$\rightarrow a^2 = 64.64 \rightarrow a = \sqrt{64.64} = 8.04\text{m}$$

$$\frac{a}{\sin A} = \frac{b}{\sin B} \rightarrow \frac{8.04}{\sin 70} = \frac{8.2}{\sin B}$$

$$\rightarrow \sin B = \frac{8.2 * \sin 70}{8.04} = 0.9584$$

$$\rightarrow B = \sin^{-1} 0.9584 = 73.41^\circ$$

$$C = 180 - (A + B) = 180 - (70 + 73.41) = 36.59^\circ$$

ت 1. $b=6\text{m}$, $c=4\text{m}$, $B=100^\circ$, $C=120^\circ$

$A=?$, $C=?$, $a=?$ ←

$[A=38.96^\circ, C=41.046^\circ, a=3.83\text{m}]$

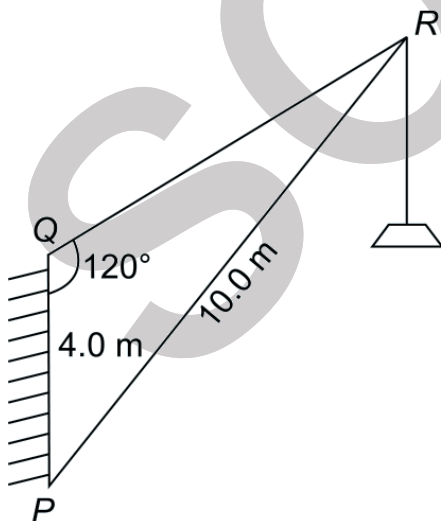
ت 2. $a=10.0\text{m}$, $b=8.0\text{m}$, $c=7.0\text{m}$

$A=?$, $B=?$, $C=?$ ←

$[A=83.33^\circ, B=52.62^\circ, C=44.05^\circ]$

ت 3. $PQ=4.0\text{m}$, $PR=10.0\text{m}$, $Q=120^\circ$

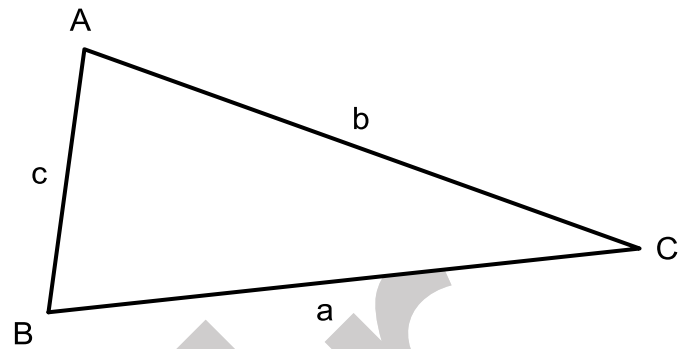
$P=?$, $QR=?$ ←



$[P=39.73^\circ, QR=7.38\text{m}]$

قانون سینوس و کسینوس

در هر مثلث دلخواه



قانون سینوس ها:

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

قانون کسینوس ها:

$$a^2 = b^2 + c^2 - 2bc \cos A$$

$$b^2 = a^2 + c^2 - 2ac \cos B$$

$$c^2 = a^2 + b^2 - 2ab \cos C$$

م 1. $b=?$, $c=?$, $C=?$ ← $a=3\text{m}$, $A=20^\circ$, $B=120^\circ$

$$\frac{a}{\sin A} = \frac{b}{\sin B} \rightarrow \frac{3}{\sin 20} = \frac{b}{\sin 120}$$

$$\rightarrow b = \frac{3 * \sin 120}{\sin 20} = 7.60\text{m}$$

$$C = 180 - (20 + 120) = 40^\circ$$

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

$$\rightarrow c = \frac{a * \sin C}{\sin A} = \frac{3 * \sin 40}{\sin 20} = 5.64\text{m}$$