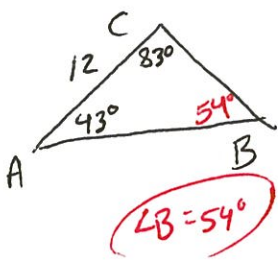


Name: Key

4.7 Law of Sine & Cosine Practice

Solve $\triangle ABC$.

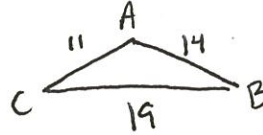
1) $A = 43^\circ$, $C = 83^\circ$, $b = 12$ **no SSA**



$$\frac{\sin 54}{12} = \frac{\sin 83}{c} \quad c = 14.7$$

$$\frac{\sin 54}{12} = \frac{\sin 43}{a} \quad a = 10.1$$

2) $a = 19$, $b = 11$, $c = 14$



$$14^2 = 11^2 + 19^2 - 2(11)(19)\cos A$$

$$44 = -308 \cos A$$

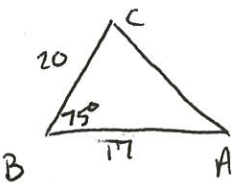
$$\angle A = 98^\circ$$

$$\frac{\sin 98^\circ}{19} = \frac{\sin C}{14}$$

$$\angle C = 47^\circ$$

$$\angle B = 35^\circ$$

3) $B = 75^\circ$, $a = 20$, $c = 17$



$$b^2 = 20^2 + 17^2 - 2(20)(17)\cos 75^\circ$$

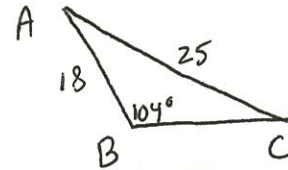
$$b = 22.6$$

$$\frac{\sin 75^\circ}{22.6} = \frac{\sin A}{20}$$

$$\angle A = 59^\circ$$

$$\angle B = 40^\circ$$

4) $B = 104^\circ$, $b = 25$, $c = 18$ **SSA!**



$$\frac{\sin 104^\circ}{25} = \frac{\sin C}{18}$$

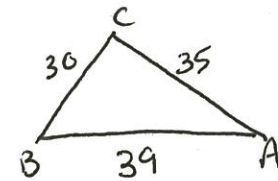
$$\angle C = 44^\circ \text{ or } 136^\circ$$

$$\angle A = 32^\circ$$

$$\frac{\sin 104^\circ}{25} = \frac{\sin 32^\circ}{a}$$

$$a = 13.7$$

5) $a = 30$, $b = 35$, $c = 39$



$$39^2 = 35^2 + 30^2 - 2(35)(30)\cos C$$

$$-604 = -2100 \cos C$$

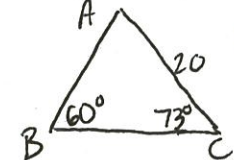
$$\angle C = 73^\circ$$

$$\frac{\sin 73^\circ}{39} = \frac{\sin A}{30}$$

$$\angle A = 47^\circ$$

$$\angle B = 60^\circ$$

6) $B = 60^\circ$, $C = 73^\circ$, $B = 20$



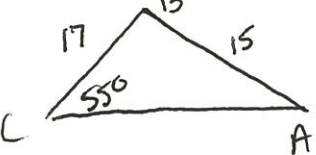
$$\frac{\sin 73^\circ}{c} = \frac{\sin 60^\circ}{20}$$

$$c = 22.1$$

$$\frac{\sin 47^\circ}{a} = \frac{\sin 60^\circ}{20}$$

$$a = 16.9$$

7) $C = 55^\circ$, $a = 17$, $c = 15$ **SSA!**



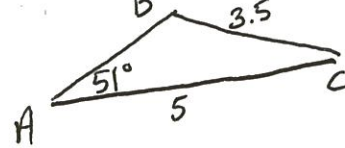
$$\frac{\sin 55^\circ}{15} = \frac{\sin A}{17}$$

$$\angle A = 68^\circ \text{ or } 112^\circ$$

$$\angle B = 57^\circ \text{ or } 13^\circ$$

$$\frac{\sin 55^\circ}{15} = \frac{\sin 57^\circ}{b} \text{ or } \frac{\sin 55^\circ}{15} = \frac{\sin 13^\circ}{b}$$

8) $A = 51^\circ$, $a = 3.5$, $b = 5$ **SSA!**



$$\frac{\sin 51^\circ}{3.5} = \frac{\sin B}{5}$$

not possible.

No Triangle.