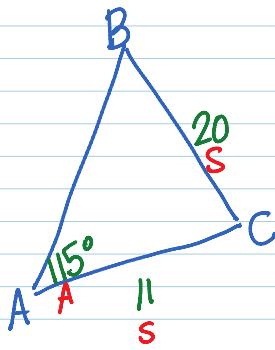


More Law of Sines

① Solve $\triangle ABC$ with $A=115^\circ$, $a=20$, $b=11$.



SSA

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

$$\frac{\sin B}{11} = \frac{\sin 115}{20}$$

$$\frac{20 \sin B}{20} = \frac{11 \sin 115}{20}$$

$$\sin B = .50$$

$$B = \sin^{-1}(.50)$$

$$B = 29.90^\circ *$$

1 Δ ? \checkmark

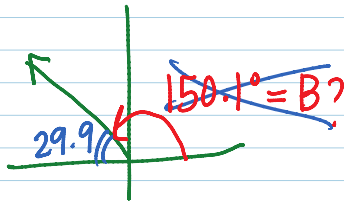
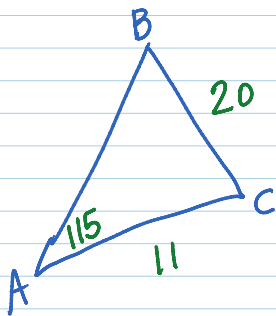
$$C = 180 - (29.90 + 115)$$

$$C = 35.10^\circ$$

$$\frac{\sin 35.10}{c} = \frac{\sin 115}{20}$$

$$\frac{c \sin 115}{\sin 115} = \frac{20 \sin 35.10}{\sin 115}$$

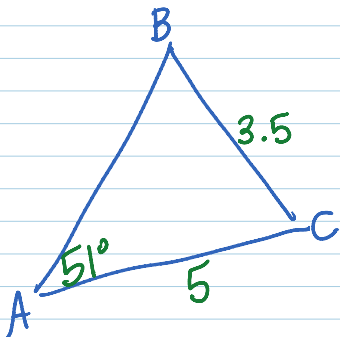
$$c = 12.69$$



$$115 + 150.1 > 180$$

no 2nd Δ

② Solve $\triangle ABC$ with $A=51^\circ$, $a=3.5$, $b=5$.



SSA

no Δ

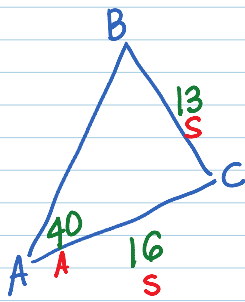
$$\frac{\sin B}{5} = \frac{\sin 51}{3.5}$$

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

$$\sin B = 1.11$$

$$B = \sin^{-1}(1.11)$$

③ Solve $\triangle ABC$ with $A=40^\circ$, $a=13$, $b=16$.



SSA

$$\frac{\sin B}{16} = \frac{\sin 40}{13}$$

$$\sin B = \frac{16 \sin 40}{13}$$

$$B = \sin^{-1}(.79)$$

$$B = 52.29^\circ *$$

$$C = 180 - (52.29 + 40)$$

$$C = 87.71^\circ$$

$$\frac{\sin 87.71}{c} = \frac{\sin 40}{13}$$

$$c = \frac{13 \sin 87.71}{\sin 40}$$

$$c = 20.21$$

2nd \triangle

$$C = 180 - (127.71 + 40)$$

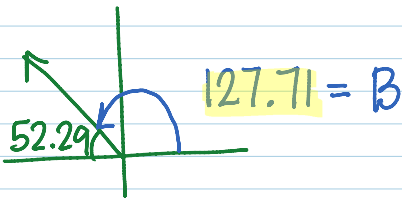
$$C = 12.29^\circ$$

$$\frac{\sin 12.29}{c} = \frac{\sin 40}{13}$$

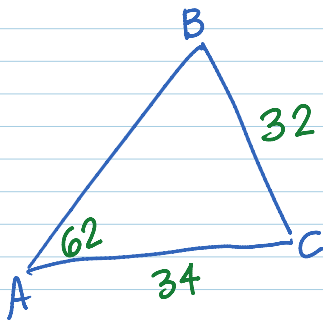
$$\frac{c \sin 40}{\sin 40} = \frac{13 \sin 12.29}{\sin 40}$$

$$c = \frac{13 \sin 12.29}{\sin 40}$$

$$c = 4.30$$



④ Solve $\triangle ABC$ with $A=62^\circ$, $a=32$, $b=34$.



$$\frac{\sin B}{34} = \frac{\sin 62}{32}$$

$$\sin B = \frac{34 \sin 62}{32}$$

$$B = \sin^{-1}(.94)$$

$$B = 69.74^\circ *$$

$$C = 180 - (69.74 + 62)$$

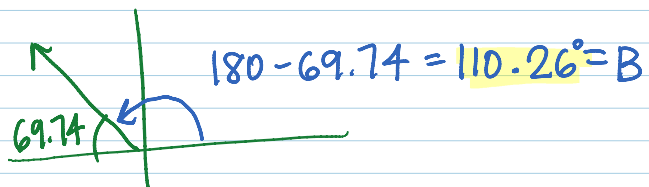
$$C = 48.26^\circ$$

$$\frac{\sin 48.26}{c} = \frac{\sin 62}{32}$$

$$c = \frac{32 \sin 48.26}{\sin 62}$$

$$c = 27.04$$

2nd Δ



$$C = 180 - (110.26 + 62)$$

$$C = 7.74^\circ$$

$$\frac{\sin 7.74}{c} = \frac{\sin 62}{32}$$

$$c = \frac{32 \sin 7.74}{\sin 62} = 4.88$$