

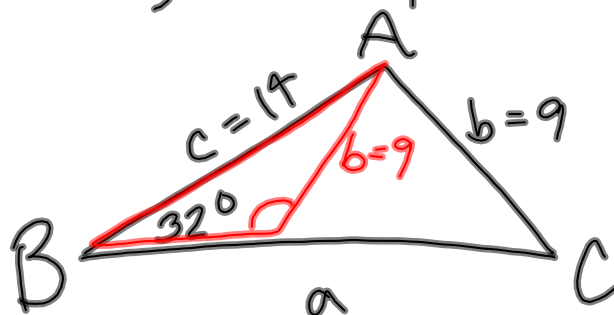
7.1 $B=32^\circ, c=14, b=9$

14. $C=56^\circ, A=92^\circ, a=17$

case 2

$$C_2 = 180^\circ - 56^\circ = 124^\circ$$

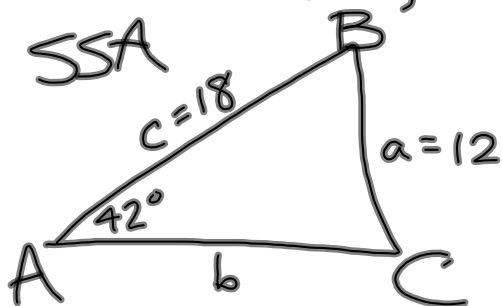
$$A_2 = 180^\circ - 32^\circ - 124^\circ = 24^\circ$$



$$a = \frac{9 \sin 24^\circ}{\sin 32^\circ} \approx 6.9$$

16. $A=42^\circ, a=12, c=18$

SSA



$$\frac{\sin C}{18} = \frac{\sin 42^\circ}{12}$$

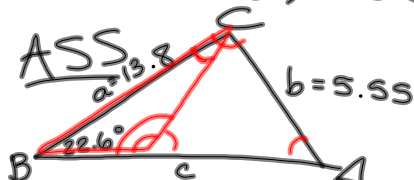
$$\sin C = \frac{18 \sin 42^\circ}{12}$$

$$C = \sin^{-1}\left(\frac{18 \sin 42^\circ}{12}\right)$$

"Domain Error"
 $\sin^{-1}(1.0003\dots)$

NO triangle!

18. $B=22.6^\circ$, $b=5.55$, $a=13.8$



$$\frac{\sin A}{13.8} = \frac{\sin 22.6^\circ}{5.55}$$

$$\sin A = \frac{13.8 \sin 22.6^\circ}{5.55}$$

$$A = \sin^{-1} \left(\frac{13.8 \sin 22.6^\circ}{5.55} \right) \approx 72.9^\circ$$

$$C = 180^\circ - 22.6^\circ - 72.9^\circ = 84.5^\circ$$

$$\frac{c}{5.55} = \frac{\sin 84.5^\circ}{\sin 22.6^\circ}$$

$$c \approx 14.4$$

Case 2

$$A_2 = 180^\circ - A_1 = 180^\circ - 72.9^\circ = 107.1^\circ$$

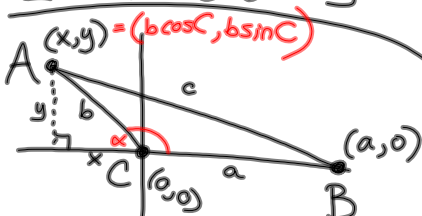
$$C_2 = 180^\circ - 22.6^\circ - 107.1^\circ = 50.3^\circ$$

$$\frac{c}{\sin 50.3^\circ} = \frac{5.55}{\sin 22.6^\circ}$$

$$c = \frac{5.55 \sin 50.3^\circ}{\sin 22.6^\circ} \approx 11.1$$



Law of Cosines



$$\cos C = \frac{x}{b} \Rightarrow x = b \cos C$$

$$\sin C = \frac{y}{b} \Rightarrow y = b \sin C$$

distance formula:

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

$$c = \sqrt{(b \cos C - a)^2 + (b \sin C - 0)^2}$$

$$c^2 = \sqrt{(b \cos C)^2 - 2(ab \cos C) + a^2 + (b \sin C)^2}$$

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

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

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

Law of Cosines :

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

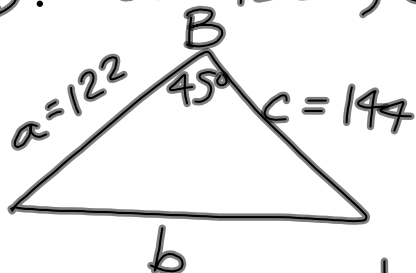
$$b^2 = a^2 + c^2 - 2ac \cos B$$

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

use for SSS & SAS

7.2 handout

b. $a = 122$, $c = 144$, $B = 45^\circ$

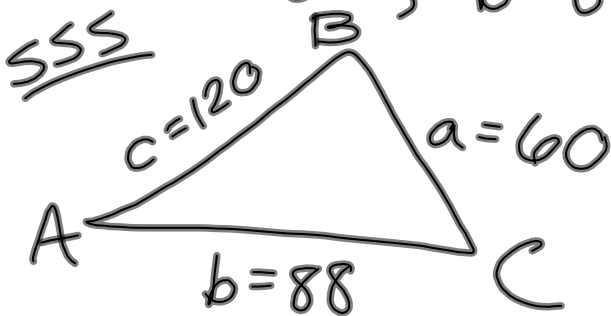


$$b^2 = a^2 + c^2 - 2ac \cos B$$

$$b = \sqrt{122^2 + 144^2 - 2(122)(144)\cos 45^\circ}$$

$$\approx 103.8$$

16. $a=60, b=88, c=120 \angle B?$



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

$$\cancel{2ac} \cos B = \frac{a^2 + c^2 - b^2}{2ac}$$

$$B = \cos^{-1} \left(\frac{60^2 + 120^2 - 88^2}{2(60)(120)} \right)$$

$$= 44.6^\circ$$

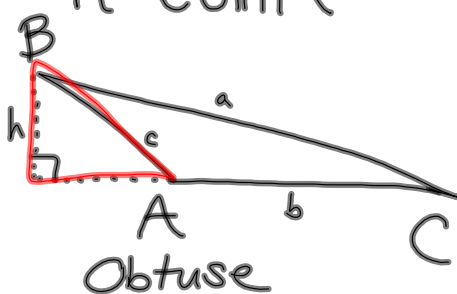
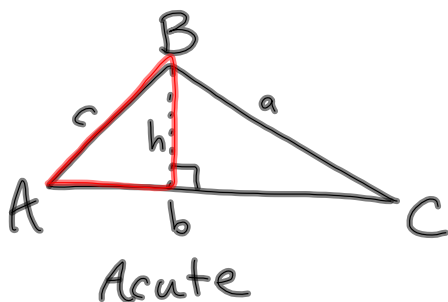
$$B = \cos^{-1} \left(\frac{a^2 + c^2 - b^2}{2ac} \right)$$

$$= \arccos \left(\frac{a^2 + c^2 - b^2}{2ac} \right)$$

Area of a \triangle !

$$\sin A = \frac{h}{c}$$

$$h = c \sin A$$

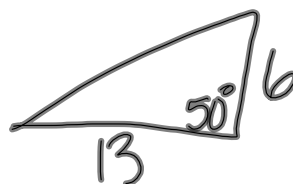


$$\text{Area} = \frac{1}{2} \text{base} \cdot \text{height}$$

$$K = \frac{1}{2} b \cdot c \sin A$$

$$= \frac{1}{2} ab \sin C$$

$$= \frac{1}{2} ac \sin B$$



$$\text{area} = \frac{1}{2} (13)(6) \cdot \sin 50^\circ$$

$$= 29.9 \text{ unit}^2$$

handout
homework

7.1 # 13-21 odd

7.2 # 9-19 odd
& 25-29 odd