

Pre Calculus Math II

page 108 part 1 #1-5

1. a) $\frac{a}{\sin 35^\circ} = \frac{10}{\sin 40^\circ}$

$$\frac{a}{0.5736} = \frac{10}{0.6428}$$

$$\frac{0.6428a}{0.6428} = \frac{5.736}{0.6428}$$

$$a = 8.9$$

cross multiply

b) $\frac{b}{\sin 48^\circ} = \frac{65}{\sin 75^\circ}$

$$\frac{b}{0.7431} = \frac{65}{0.9659}$$

$$\frac{0.9659b}{0.9659} = \frac{48.3015}{0.9659}$$

$$b = 50.0$$

c) $\frac{\sin \theta}{12} = \frac{\sin 50^\circ}{65}$

$$\frac{\sin \theta}{12} = \frac{0.7660}{65}$$

$$\frac{\sin \theta}{12} = 0.0118$$

$$\sin \theta = 0.1414$$

$$\theta = 8^\circ$$

use \sin^{-1}

d) $\frac{\sin A}{25} = \frac{\sin 62^\circ}{32}$

$$\frac{\sin A}{25} = \frac{0.8829}{32}$$

$$\frac{\sin A}{25} = 0.0276$$

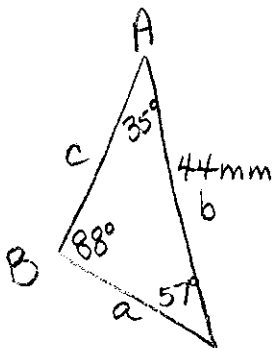
$$\sin A = 0.6898$$

$$A = 44^\circ$$

* Note: I have rounded the ratios to 4 decimal places but I actually try to use all the decimals on the calculator in the next step.

eg. 1c) $\sin 50^\circ$ is 0.766044443 on the calculator but I wrote 0.7660. When I went to divide by 65 I used the long number that was on my calculator (don't clear it!)

2. a)



$$LC = 180^\circ - 35^\circ - 88^\circ$$

$$LC = 57^\circ$$

$$\frac{\sin 88^\circ}{44} = \frac{\sin 57^\circ}{c}$$

$$\frac{0.9994}{44} = \frac{0.8387}{c}$$

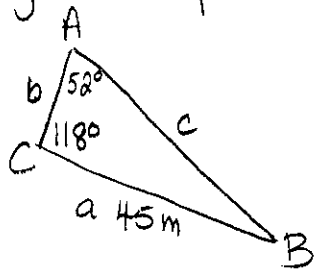
$$0.9994c = 36.9015$$

$$c = 36.9237$$

$$c = 36.9 \text{ mm}$$

find AB - which actually side c.

2. b) Page 108 part 1 cont.



$$\frac{\sin 52^\circ}{45} = \frac{\sin 118^\circ}{c}$$

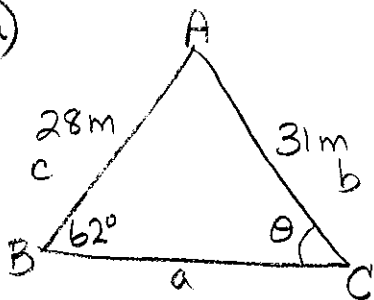
$$\frac{0.7880}{45} = \frac{0.8829}{c}$$

$$0.7880c = 39.7326$$

$$c = 50.4221$$

$$c = 50.4\text{ m}$$

3. a)



$$\frac{\sin 62^\circ}{31} = \frac{\sin \theta}{28}$$

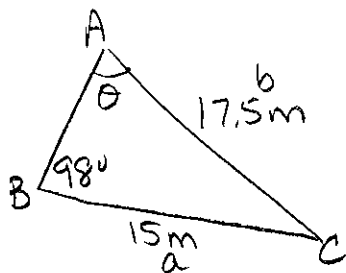
$$\frac{0.8829}{31} = \frac{\sin \theta}{28}$$

$$0.0285 = \frac{\sin \theta}{28}$$

$$0.7975 = \sin \theta$$

$$53^\circ = \theta$$

b)



$$\frac{\sin 98^\circ}{17.5} = \frac{\sin \theta}{15}$$

$$\frac{0.9903}{17.5} = \frac{\sin \theta}{15}$$

$$0.0566 = \frac{\sin \theta}{15}$$

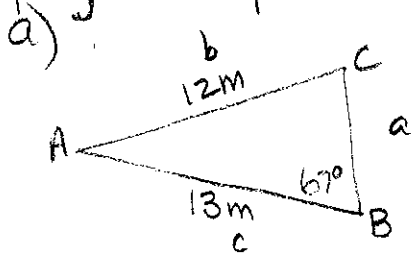
$$0.8488 = \sin \theta$$

$$58^\circ = \theta$$

Remember: keep all the decimal places on your calculator to use in the next step.

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4. **** See note next page**



① $\frac{\sin 67^\circ}{12} = \frac{\sin C}{13}$

$\frac{0.9205}{12} = \frac{\sin C}{13}$

$0.0767 = \frac{\sin C}{13}$

$0.9972 = \sin C$

$86^\circ = \angle C$

③ $\frac{\sin 27^\circ}{a} = \frac{\sin 67^\circ}{12}$

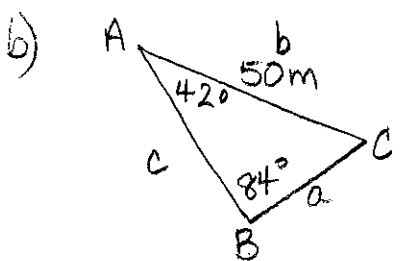
$\frac{0.45399}{a} = \frac{0.9205}{12}$

$5.44788 = 0.9205a$

$5.9\text{m} = a$

② $\angle A = 180^\circ - 67^\circ - 86^\circ$

$\angle A = 27^\circ$



② $\frac{\sin 42^\circ}{a} = \frac{\sin 84^\circ}{50}$

$\frac{0.6691}{a} = \frac{0.9945}{50}$

$33.455 = 0.9945a$

$33.6 = a_m$

③ $\frac{c}{\sin 54^\circ} = \frac{50}{\sin 84^\circ}$

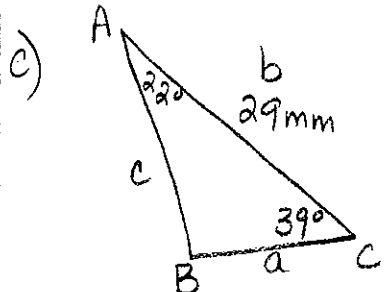
$\frac{c}{0.8090} = \frac{50}{0.9945}$

$\frac{c}{0.8090} = 50.2765$

$c = 40.7_m$

① $\angle C = 180^\circ - 42^\circ - 84^\circ$

$\angle C = 54^\circ$



② $\frac{c}{\sin 39^\circ} = \frac{29}{\sin 119^\circ}$

$\frac{c}{0.6293} = \frac{29}{0.8746}$

$\frac{c}{0.6293} = 33.1580$

$c = 20.9_{\text{mm}}$

③ $\frac{a}{\sin 22^\circ} = \frac{29}{\sin 119^\circ}$

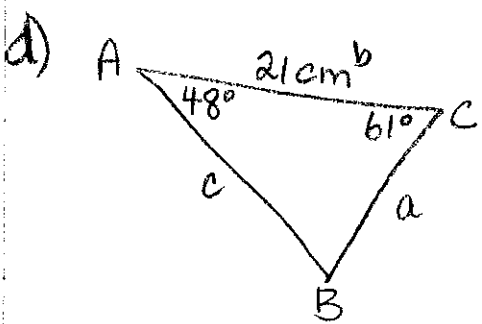
$\frac{a}{0.3746} = \frac{29}{0.8746}$

$\frac{a}{0.3746} = 33.1580$

$a = 12.42_{\text{mm}}$

① $\angle B = 180^\circ - 22^\circ - 39^\circ$

$\angle B = 119^\circ$



② $\frac{c}{\sin 61^\circ} = \frac{21}{\sin 71^\circ}$

$\frac{c}{0.8746} = \frac{21}{0.9455}$

$\frac{c}{0.8746} = 22.2105$

$c = 19.4\text{cm}$

③ $\frac{a}{\sin 48^\circ} = \frac{21}{\sin 71^\circ}$

$\frac{a}{0.7431} = \frac{21}{0.9455}$

$\frac{a}{0.7431} = 22.2105$

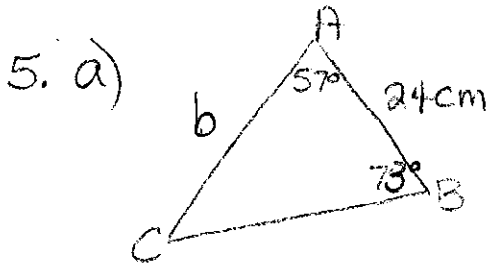
$a = 16.5\text{cm}$

① $\angle B = 180^\circ - 48^\circ - 61^\circ$

$\angle B = 71^\circ$

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4. a) Note: this is the ambiguous case that we will be considering to know how.



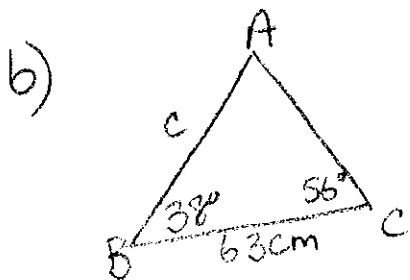
$$\begin{aligned} \angle C &= 180^\circ - 57^\circ - 73^\circ \\ \angle C &= 50^\circ \end{aligned}$$

$$\frac{b}{\sin 73^\circ} = \frac{24}{\sin 50^\circ}$$

$$\frac{b}{0.9563} = \frac{24}{0.7660}$$

$$\frac{b}{0.9563} = 31.3316$$

$$b = 30.0 \text{ cm}$$



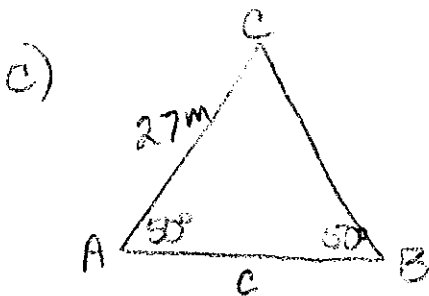
$$\begin{aligned} \angle A &= 180^\circ - 38^\circ - 56^\circ \\ \angle A &= 86^\circ \end{aligned}$$

$$\frac{c}{\sin 36^\circ} = \frac{63}{\sin 86^\circ}$$

$$\frac{c}{0.8290} = \frac{63}{0.9976}$$

$$\frac{c}{0.8290} = 63.1516$$

$$c = 52.4 \text{ cm}$$



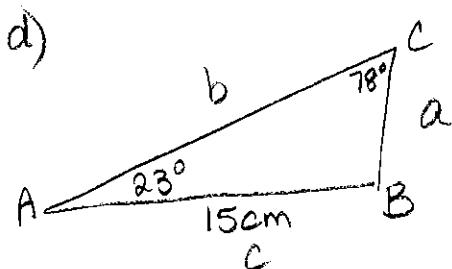
$$\begin{aligned} \angle C &= 180^\circ - 55^\circ - 50^\circ \\ \angle C &= 80^\circ \end{aligned}$$

$$\frac{c}{\sin 80^\circ} = \frac{27}{\sin 50^\circ}$$

$$\frac{c}{0.9848} = \frac{27}{0.7660}$$

$$\frac{c}{0.9848} = 35.248$$

$$c = 34.7 \text{ m}$$



$$\frac{a}{\sin 23^\circ} = \frac{15}{\sin 78^\circ}$$

$$\frac{a}{0.3907} = \frac{15}{0.9781}$$

$$\frac{a}{0.3907} = 15.3359$$

$$a = 5.99 \text{ cm}$$