Algebra 3 Chapter 7 Hit Quiz Review content.
7.1 : Law of Sires. pg 671-672 $\# 17$
\# 3 .


Finding $A$ : $\quad 180-82-54=44^{\circ}$
Finding $c$ : $\frac{c}{\sin C}=\frac{16}{\sin 44}$
So $c=\frac{16 \sin 82}{\sin 44} \approx 22.8$ rounded
7.1
\#3
Finding $b: \frac{b}{\sin B}=\frac{a}{\sin A}$

$$
\begin{aligned}
& \begin{array}{l}
\text { Finding } b: \sin B \\
\frac{b}{\sin 54^{\prime}}=\frac{16}{\sin 44} \Rightarrow b=\frac{16 \sin 54}{\sin 44^{\circ}} \approx 18.6<\text { rounded } \\
A=44^{\circ} \quad a=11 \\
B=54^{\circ} \quad b=18.6 \quad \text { Done } \\
C=82^{\circ} \quad c=22.8
\end{array} \quad . \quad l
\end{aligned}
$$

\# 17 Given $a=20, b=15, A=40^{\circ}$. Find $B, C, c$; decide if you have 1,2 , or no triangles.

Finding $B$ (since Ives given b): $\frac{\sin B}{15}=\frac{\sin 40}{20}$
2.1

$$
\begin{aligned}
\sin B=\frac{15 \sin 40}{20} \approx 0.48209 \text { so } B & =\sin ^{-1}(0.48209) \\
B & \approx 28.8
\end{aligned}
$$

And Choice Ex $B$ (in the event $\longleftarrow \quad B \approx 29^{\circ}$ that we have 2 triangles)
$180-29=151^{\circ}$, we cant have this because if $A=40^{\circ}$ $\dot{ } \dot{B}=151$, it cant be a triangle. So $B$ must $=25^{\circ}$
\# 17 continued...
Finding $C$ : $180-40-29^{A}=111^{\circ}$
Finding $c: \frac{c}{\sin 111}=\frac{20}{\sin 40} \Rightarrow c=\frac{20 \sin 111}{\sin 40} \approx 29.0$

$$
\begin{array}{ll}
A=40^{\circ} & a=20 \\
B=29^{\circ} & b=15 \\
C=111^{\circ} & c=29.0
\end{array}
$$

7. 2 Law of cosines pg $681 \# 1,18$


Find $a$...

$$
\begin{aligned}
a^{2} & =b^{2}+c^{2}-2 b c \cos A \\
a^{2} & =4^{2}+8^{2}-2(4)(8) \cos 46^{\circ} \\
\sqrt{a^{2}} & =\sqrt{80-64 \cos 46^{\circ}} \\
a & \approx 5.9617 \approx 6.0 \approx \text { rounded }
\end{aligned}
$$

Find $B$ or $C$ using law of Sines...

$$
\begin{aligned}
& \text { Find } B \text { or C using law of Sines... } \\
& \frac{\sin B}{4}=\frac{\sin 46}{6} \Rightarrow B=\sin ^{-1}\left(\frac{4 \sin 46}{6}\right) \approx 29^{\text {. }} \text {. rounded }
\end{aligned}
$$

Finding C: $180-46-29^{A}=105^{\circ}$

$$
\begin{array}{ll}
A=46^{\circ} & a=6.0 \\
B=29^{\circ} & b=4 \\
C=105^{\circ} & c=8
\end{array}
$$

7. $2 * 18$. given $a=4, b=6, c=9$

So...
you could use Any of the law of Carire Equations to find $A, B$, or $C$.
7.2
\# 18

$$
\begin{array}{ll}
a^{2}=b^{2}+c^{2}-2 b c \cos A \Rightarrow \\
\cos A \approx 0.9351852 \\
A & =\cos ^{-1}(0.9351852) \\
A \approx 20 & 16=36+81-108 \cos A \\
16 & =117-108 \cos A \\
161 & =-108 \cos A
\end{array}
$$

find $\frac{c}{}: \frac{\sin C}{9}=\frac{\sin 21}{4} \Rightarrow \sin C=\frac{9 \sin 2}{4} \approx 0.8062789$

$$
c=\sin ^{-1}(0.8062789)
$$

Fad B: $\quad 180-i 26-21^{A}=32^{\circ}$

$$
\begin{aligned}
& C \approx 53.7 \approx 54^{\circ} \\
& \text { Ind Choice: } 180-54=126^{\circ}
\end{aligned}
$$

$\nrightarrow 7.6$ Vectors:

Showing 2 vector are equal
Ex: Vector 1: Initial Point $(0,1)$ terminal Point $(2,5)$
Vector 2 : Initial Point $(-2,2)$ terminal Point $(0,6)$
Test for same slope: $\frac{y_{2}+y_{1}}{x_{2}-x_{1}} \quad$ Vector: $\frac{5-1}{z-0}=\frac{4}{2}=2$ "Direction"

Vector $2: \frac{6-2}{0-(-2)}=\frac{4}{2}=2$
Test for same distance: $\quad\left\|V_{1}\right\|=\sqrt{(2-0)^{2}+(5-1)^{2}}$

$$
\begin{aligned}
& \text { Magnitude" }=\sqrt{2^{2}+4^{2}}=\sqrt{4+16}=\sqrt{20} \\
&\left\|V_{2}\right\|=\sqrt{(0-(-2))^{2}+(6-2)^{2}} \\
& V_{1} \stackrel{\text { \& }}{ } V_{2} \text { are Equal } \\
&=\sqrt{2^{2}+4^{2}}=\sqrt{4+16}=\sqrt{20}
\end{aligned}
$$

7.6 vectors continued... Draw the resultant

Ind Problem: Add the vectors $\vec{v}$ ह $\vec{w}$
T.P. : Terminal Point

$$
\begin{aligned}
& \vec{v}: I \cdot P:(1,3) \\
& \vec{w}: I \cdot P . P:(0,-2)
\end{aligned}
$$



$$
\vec{v}+\vec{w}^{\text {let }}=\stackrel{\rightharpoonup}{z}
$$

Attach $\vec{w}$ to the end of $\vec{v}$

Count the slope of $\stackrel{\rightharpoonup}{\omega}$... Down 4 , right 6 . Dree that cat the end of $\vec{v}$.

Also know how to subtract. vectors.

