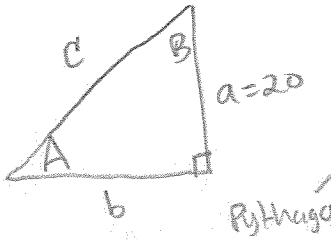
Homework 3 MATH 1540 Fall 2019

§7.2 #7) $\cos\left(\frac{\pi}{3}\right) = \sin\left(\frac{\pi}{2} - \frac{\pi}{3}\right)$

$= \sin\left(\frac{3\pi}{6} - \frac{2\pi}{6}\right)$

$= \sin\left(\frac{\pi}{6}\right)$

#11) Given: $a=20$, $\sin(B)=\frac{1}{2}$



$\frac{1}{2} = \sin(B) = \frac{b}{c}$ (given, def)

$b^2+20^2=c^2$ (Pythagorean theorem) $\rightarrow$ $c=\sqrt{b^2+20^2}$

$\frac{1}{2} = \frac{b}{\sqrt{b^2+20^2}} \rightarrow \sqrt{b^2+20^2} = 2b$

square $\rightarrow$ $b^2+20^2=4b^2$

$20^2 = 3b^2$

$b^2 = \frac{20^2}{3}$

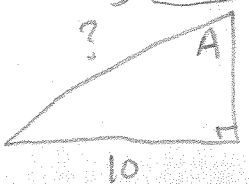
$b = +\sqrt{\frac{20^2}{3}} = \frac{20}{\sqrt{3}} \approx 11.5470$

$\frac{1}{2} = \frac{20/\sqrt{3}}{c}$

$\rightarrow$ $c = \frac{40}{\sqrt{3}} \approx 23.0940$

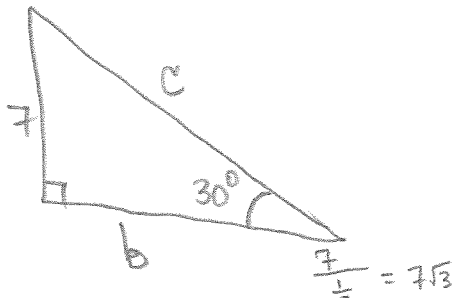
#17) $\sin(A) = \frac{\text{opp } A}{\text{hyp}} = \frac{10}{\sqrt{116}} \approx 0.9284$

$\frac{10}{2\sqrt{29}} = \frac{5}{\sqrt{29}}$



$10^2+4^2 = ?^2 \rightarrow ? = \pm\sqrt{116}$

#29) Given:



$\frac{7}{\frac{1}{\sqrt{3}}} = 7\sqrt{3}$

Find b def: $\tan(30°) = \frac{7}{b} \rightarrow b = \frac{7}{\tan(30°)}$

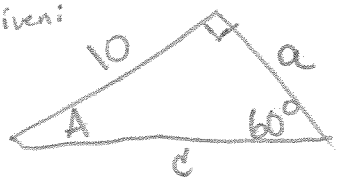
≈ 12.12

$\frac{7}{\frac{1}{2}} = 14$

Find c def: $\sin(30°) = \frac{7}{c} \rightarrow c = \frac{7}{\sin(30°)}$

≈ 14

#30) Given:



$\frac{10}{\sqrt{3}}$

Find a: $\tan(60°) = \frac{10}{a} \rightarrow a = \frac{10}{\tan(60°)}$

≈ 5.774

$\frac{10}{\frac{\sqrt{3}}{2}} = \frac{20}{\sqrt{3}}$

Find c: $\sin(60°) = \frac{10}{c} \rightarrow c = \frac{10}{\sin(60°)}$

≈ 11.55