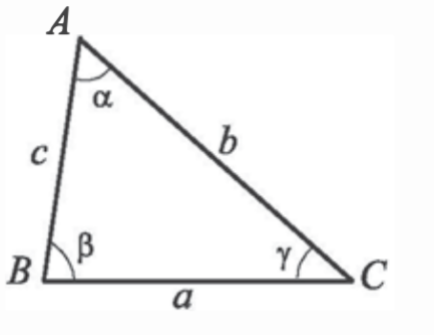
# Math 418: Worksheet 11

November 27, 2020

Focus on the first 8 Problems. Then try the remaining problems.

1. Find the domain of $f(x) = \frac{2x^3}{\tan(x)+\sqrt{3}}$
2. Find all $\psi$ such that $\cot^2 \psi = 1$
3. Find the range of $g(x) = 3\cos(2x) + 9$
4. Find all $\sigma$ in $\left[\frac{21\pi}{8}, 3\pi\right]$ such that $\sin^2(4\sigma) = \frac{1}{2}$
5. Find all $\theta$ in $[0, 2\pi]$ such that $\sin^2\theta - 2\sin\theta + 1 = 0$
6. Find all $\phi$ such that $\cos^2\phi + 2\cos\phi - 3 = 0$
7. The following problems all involve the triangle below.




   a) Suppose $\alpha = \frac{\pi}{6}, \beta = \frac{\pi}{2}$ and $b = 15$m. Find $a, c$ and $\gamma$.
   b) Suppose $\tan\gamma = 10, \beta = \frac{\pi}{2}$ and $b = 4$m. Find $a$ and $c$.
8. Find all $\rho$ in $[0, 2\pi]$ so that $\left(e^{\sin(\rho)} - e\right)\left(e^{\sin(\rho)} - \frac{1}{\sqrt{e}}\right) = 0$
9. Find all $\omega$ such that $(\cos(\omega)\tan(\omega) - \tan(\omega)) = 0$
10. Find all $\lambda$ such that $e^{\sin\lambda} - 1 = 0$