Precalculs Exam # 1 Version 1

These practice exams are for individual use only. Any commercial use are strictly prohibited.

We assume that $\pi = 3.1415926.....$

1. (30) Solve the following right triangles. Angles MUST be expressed by $\sin^{-1}, \tan^{-1}$. Lengths MUST be expressed by cos and tan.

   (a) $c = 3$ and $b = 1$;
   $a =$ $\alpha =$

   (b) $a = 2$ and $\beta = \frac{2\pi}{5}$;
   $b =$ $c =$

   (c) $c = 3$ and $\beta = \frac{\pi}{6}$;
   $b =$ $a =$

2. (20) Find the period and phase shift of each of the following function and draw the graph.

   (a) $f(x) = -2\sin(4x - \pi) + 2$
   period= phase shift=

   Graph:

(b) $f(x) = 2\cos(\frac{x}{2} + \frac{\pi}{2}) + 1$
period= phase shift=

Graph:

3. (20) Prove the following identities:

- $\cos^4 x - \sin^4 x = 1 - 2\sin^2 x$;

- $$\frac{1 - 2\cos x - 3\cos^2 x}{\sin^2 x} = \frac{1 - 3\cos x}{1 - \cos x}$$

4. (10) The domain of $2\sec(2x+\pi)$ is
   The range of $2\sec(2x+\pi)$ is

5. (21) True or False.

   (a) $\cos^{-1}(\cos(-0.5)) = -0.5$;

   (b) $\sec\frac{\pi}{2} = 1$;

   (c) $\sin(\sin^{-1}(-0.5)) = -0.5$;

   (d) $\tan^{-1}(\tan(-0.5)) = -0.5$;

   (e) $\csc(\sin(-0.5)) = -2$;

   (f) $\sin(\csc(-0.5)) = -2$;

   (g) $\tan x$ is a one to one function on $[0, \pi)$.