Math 30 Sec 4 DUE: 23 October 2002

REPLACEMENT PROBLEMS FOR EXAM II

Name:_____

I pledge that I have neither given nor received any unauthorized assistance on this exam.

_____
(signature)

DIRECTIONS

1) Print your name and sign the honor pledge above. If the pledge is not signed, your problems will ***not*** be graded.

2) You may use a calculator (except symbolic manipulators such as a TI-89, TI-92, or similar), but your answers must be given in their ***exact*** form. (i.e. $\sqrt{3}$ and not 1.73, π and not 3.14). Angles should be given in radians and **NOT** in degrees.

3) All work must be shown on this exam. ***No credit will be given for a correct answer without supporting work that leads to the answer***. When it is indicated that calculators are not to be used, clear non-calculator work must be shown.

4) You may use only your own book and your own notes for these problems. You **may not** talk about these problems with anyone in this class, anyone who has previously taken this class, or anyone in the Math Help Center. In other words, you are to speak to no one but me about these problems.

5) These problems are to supplement problems 4 and 6 from Exam 2 and will each be graded out of 16 points. The score for this problem will be averaged with its corresponding problem from Exam 2 which will then be a replacement score for that problem. That is, average your scores from Problem 4 from Exam II and Problem 1 on this sheet to obtain a new score and average your score from Problem 6 on Exam II with your score on Problem 2 on this sheet to obtain a replacement score for that problem. In this manner, you will be able to obtain up to half your points back on these two problems. If your score for problems on this sheet are less than your original score, no averaging will take place. That is, you can only improve your score by doing these problems well.

POTENTIALLY USEFUL FORMULAS

$$\sin(\alpha \pm \beta) = \sin\alpha\cos\beta \pm \cos\alpha\sin\beta$$

$$\cos(\alpha \pm \beta) = \cos\alpha\cos\beta \mp \sin\alpha\sin\beta$$

$$\tan(\alpha \pm \beta) = \frac{\tan\alpha \pm \tan\beta}{1 \mp \tan\alpha\tan\beta}$$

$$\sin 2\theta = 2\sin\theta\cos\theta$$

$$\cos 2\theta = \cos^2\theta - \sin^2\theta = 1 - 2\sin^2\theta = 2\cos^2\theta - 1$$

$$\tan 2\theta = \frac{2\tan\theta}{1 - \tan^2\theta}$$

$$\sin\frac{\theta}{2} = \pm\sqrt{\frac{1-\cos\theta}{2}} \qquad \cos\frac{\theta}{2} = \pm\sqrt{\frac{1+\cos\theta}{2}} \qquad \tan\frac{\theta}{2} = \pm\sqrt{\frac{1-\cos\theta}{1+\cos\theta}} = \frac{1-\cos\theta}{\sin\theta} = \frac{\sin\theta}{1+\cos\theta}$$

1. Establish the following identity: $\csc 4\theta = \frac{1}{4} \csc\theta \sec\theta \sec 2\theta$

2. Find all solutions in the interval $0 \leq \theta < 2\pi$ of the equation: $2\tan 2\theta = -\sec 2\theta$.