

## Pre-Calculus Homework #15

- 1)  $\csc x - \cos x \cot x = \sin x$
- 2)  $(\sin \theta + \cos \theta)^2 = 1 + \sin 2\theta$
- 3)  $(\csc \alpha + \cot \alpha)^2 = \frac{1 + \cos \alpha}{1 - \cos \alpha}$
- 4)  $\frac{1 + \sin \beta}{1 + \csc \beta} = \frac{\tan \beta}{\sec \beta}$
- 5)  $\frac{\tan y + \sin y}{2 \tan y} = \cos^2\left(\frac{y}{2}\right)$
- 6) Find all of the exact solutions to  $\csc^2 \theta - 4 = 0$  on the interval  $0 \leq \theta < 360^\circ$  and write all of your answer in degrees.
- 7) Find  $\sin 75^\circ$  exactly.
- 8) Find all of the exact solutions to  $2 \sin \theta \cos \theta + \sin \theta = 0$  on the interval  $0 \leq \theta < 2\pi$  and write all of your answer in radians.
- 9) Find  $\tan \frac{7\pi}{12}$  exactly.
- 10) Find all of the exact solutions to  $\sin 4\theta - 2 \sin 2\theta = 0$  on the interval  $0 \leq \theta < 360^\circ$  and write all of your answer in degrees.
- 11) Find  $\cos \frac{\pi}{8}$  exactly.
- 12) Find all of the exact solutions to  $\cos 2\theta \sin \theta + \sin \theta = 0$  on the interval  $0 \leq \theta < 2\pi$  and write all of your answer in radians.
- 13) Find  $\cot 15^\circ$  exactly.
- 14) Find all of the exact solutions to  $2 \sec \theta \tan \theta + 2 \sec \theta + \tan \theta + 1 = 0$  on the interval  $0 \leq \theta < 360^\circ$  and write all of your answer in degrees.
- 15) Find  $\cos 112.5^\circ$  exactly.
- 16) Find all of the exact solutions to  $\cot \theta = \tan(2\theta - 3\pi)$  on the interval  $0 \leq \theta < 2\pi$  and write all of your answer in radians.
- 17) Find the exact values of  $\sin 2\theta$ ,  $\cos 2\theta$ , and  $\tan 2\theta$  and find the quadrant in which  $2\theta$  lies if  $\cos \theta = \frac{-3}{5}$ , and  $\theta$  lies in quadrant III
- 18) Find all of the approximate solutions, rounded to three decimal places, to  $\sec^2 \theta + 2 \tan \theta = 9$  on the interval  $0 \leq \theta < 360^\circ$  and write all of your answer in degrees.
- 19) Find the exact values of  $\sin 2\theta$ ,  $\cos 2\theta$ , and  $\tan 2\theta$  and find the quadrant in which  $2\theta$  lies if  $\tan \theta = \frac{-15}{8}$ , and  $\theta$  lies in quadrant II
- 20) Find all of the approximate solutions, rounded to three decimal places, to  $5 \cos 2\theta + \sin \theta = -4$  on the interval  $0 \leq \theta < 2\pi$  and write all of your answer in radians.