

Answers to Fall 2006 Sample Final Exam

- $x = 0, -1, 2, i, -i$
- $x = \frac{\ln 4}{2 \ln 4 - \ln 3}$
- $\frac{1}{\csc x - \sin x} = \frac{1}{\frac{1}{\sin x} - \sin x} = \frac{\sin x}{1 - \sin^2 x} = \frac{\sin x}{\cos^2 x} = \frac{1}{\cos x} \frac{\sin x}{\cos x} = \sec x \tan x$
 - $\cos(x - \pi) = \cos x \cos \pi + \sin x \sin \pi = (\cos x)(-1) + (\sin x)(0) = -\cos x$
 - $\frac{\sqrt{2} - \sqrt{6}}{4}$
- $A = 33.56^\circ, B = 62.18^\circ, C = 84.26^\circ$
- $g(x) = \frac{2+x}{3-x}$
 - vertical: $x = -1$, horizontal: $y = 3$
 - all real numbers except -1
- $\sin x = -\frac{\sqrt{7}}{4}$
 - $\sin 2x = -\frac{3\sqrt{7}}{8}$
 - $\cot(-x) = \frac{3}{\sqrt{7}}$
- amplitude = 3, period = 9, phase shift = $\frac{9\sqrt{2}}{2\pi}$
 - $f(t) = 2 \cos 5t$
- $g(x) = 4(x-1)^2 + 2(x-1) + 5$
 - $x < -\frac{1}{4}$
 - $x > -\frac{1}{4}$
- plot the point $(2, 1)$
 - $|z| = \sqrt{5}$
 - $\sqrt{5}(\cos 0.464 + i \sin 0.464)$
 - $z^8 = -527 - 336i$
- $\langle 2, -1 \rangle$
 - $\|\mathbf{u}\| = \sqrt{5}, \|\mathbf{v}\| = 3$
 - $\frac{\langle -1, 2 \rangle}{\sqrt{5}}$
 - 90°
- $h = 756.47$ years
 - $t = 6025.88$ years