

Honors Trigonometry

Name _____

Copy original problem.

Per _____ Date _____

Convince *me* that **you** understand the concept!

Chapter 4 Exam

I

Solve $\forall x \in [0, 2\pi)$ (i.e. $0 \leq x < 2\pi$).

Use proper set notation and include “circle solutions” where appropriate.

(15 pts ea.)

a) $3 \tan \frac{x}{2} = \cot \frac{x}{2}$

b) $\sin x + \cos x = 1$

c) $\cos^{-1}\left(\frac{\sqrt{3}}{2}\right) = \frac{\pi}{2} - \sin^{-1}(3x)$

d) $\sin 2x \tan^2 2x - \tan 2x = \sin 2x$

e) $4 \cos x = 2 \cos x \csc x$

II

For each of the following functions, state the domain and range, draw the graph of the function on a properly labeled axis and show the “memory device” we use for the function.

(tot 15 pts)

a) $A(x) = \sin^{-1} x$

b) $B(x) = \cos^{-1} x$

c) $C(x) = \tan^{-1} x$

d) $D(x) = \cot^{-1} x$

e) $E(x) = \sec^{-1} x$

f) $F(x) = \csc^{-1} x$

III

Determine $\tan(\sec^{-1} x)$. Be sure to describe restrictions on any variables, as usual.

(10 pts)

Extra Credit ----- 5 pts -----Using the standard function $f(x) = \cos^{-1} x$ as a starting point,

sketch each of the following on separate axes:

a) $a(x) = 2 \cos^{-1} x$

b) $b(x) = \cos^{-1} 2x$

c) $c(x) = \cos^{-1}(x + 2)$