Honors Trigonometry Name _____

Copy original problem. Per _____ Date _____

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

No Calculators, of course.

Chapter 4 Exam

I

Solve $\forall\ x\ \varepsilon\ [0,2\pi)$ (i.e. $0 \le x < 2\pi$).
Use proper set notation and include "circle solutions" where appropriate. (15 pts ea.)

a) $\cos 2x + 5\cos x + 3 = 0$

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

c) $\cos^2 3x + \sin 3x = \frac{5}{4}$

d) $\tan 2x + 2\cos x = 0$

e) $\tan^2 3x = 1$

II

Prove $\cot^{-1} x = \tan^{-1}\left(\frac{1}{x}\right) + \pi$ for $x < 0$ (15 pts)
Include explicit comments on each line explaining or justifying what you've done.

III

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

Extra Credit ---------- 5 pts ----------

Show that there is no real number x such that $\sin x \cos x = \frac{3}{4}$. Be *very* convincing.