No Decimal Answers.

Convince *me* that **you** understand the concept.   Per _____ Date _____

C H A P T E R # 3

I   This section covers all of the first two pages of this exam. For *each* problem, supply **domain**, **range**, **amplitude**, **period** and **phase shift (including direction)** and **draw** the graph *in the areas provided*. Be sure your drawing crosses or touches the Y-axis. You may do the work for this exam *directly on thi*s exam paper rather than on the "newsprint" as usual. If you do work on newsprint be sure it is labeled with its problem number. **Indicate significant coordinates**. Each problem in this section is worth 15 points.

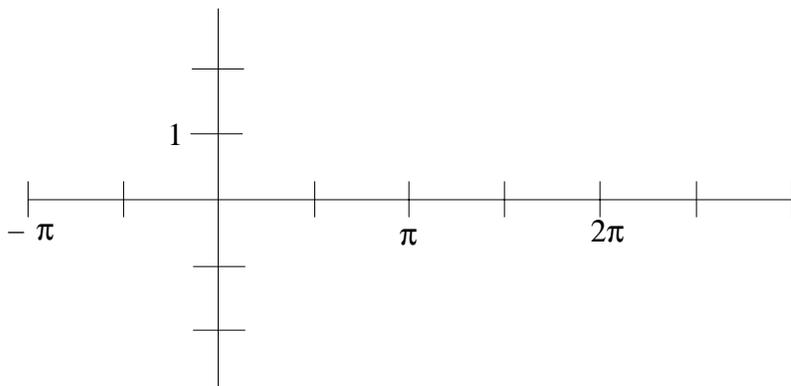A) $A(x) = 2 \cos\left(\dfrac{2x}{3} + \dfrac{\pi}{6}\right) + 1$

D_A

R_A

Per

Amp

P.S.

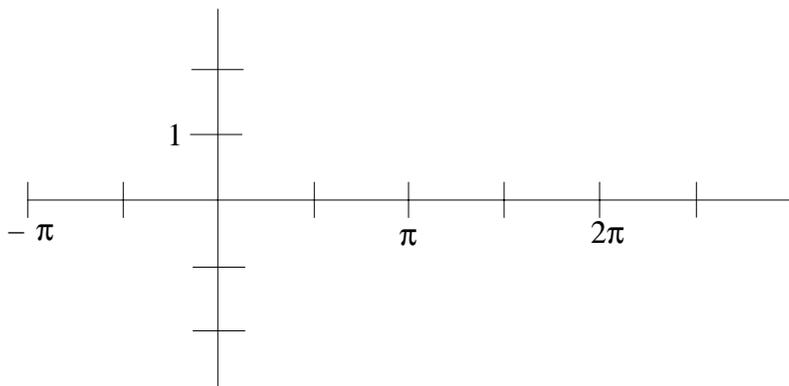B) $B(x) = -2 \sin\left(\dfrac{2x}{3} + \dfrac{\pi}{2}\right) - 1$

D_B

R_B

Per

Amp

P.S.

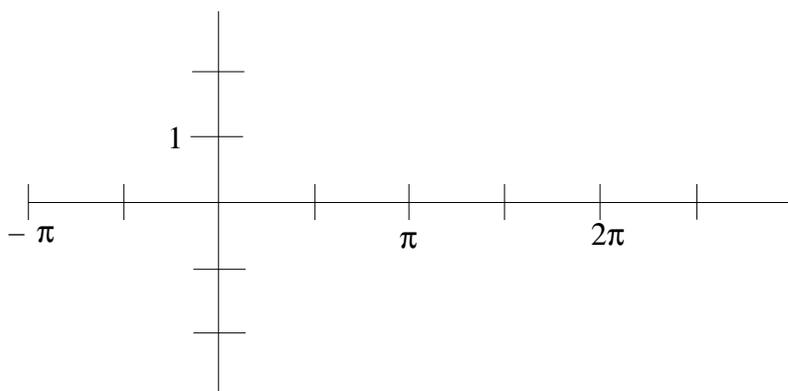C) $C(x) = \csc\left(2x + \dfrac{\pi}{2}\right) + 1$

D_C

R_C

Per

Amp

P.S.
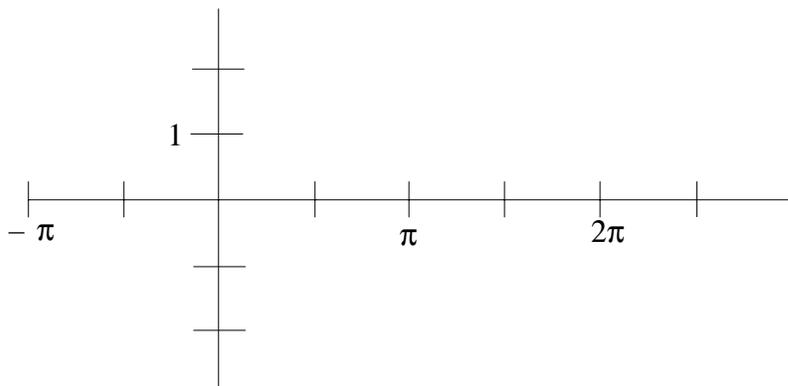
D) $D(x) = \tan \dfrac{1}{2} x - \dfrac{1}{2}$

D_D

R_D

Per

Amp

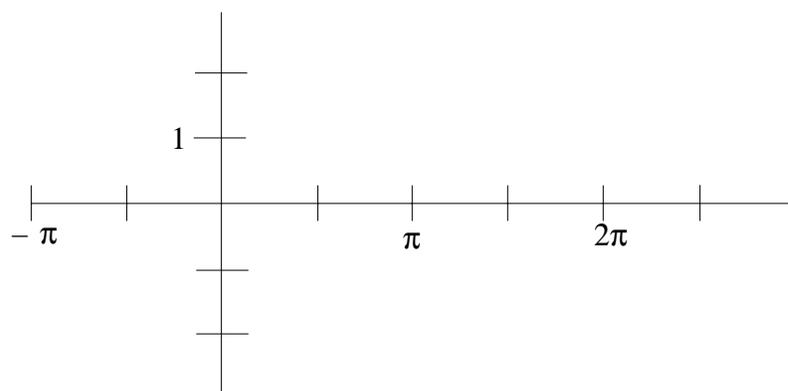P.S.

E) $E(x) = \sec \dfrac{3}{4} x$
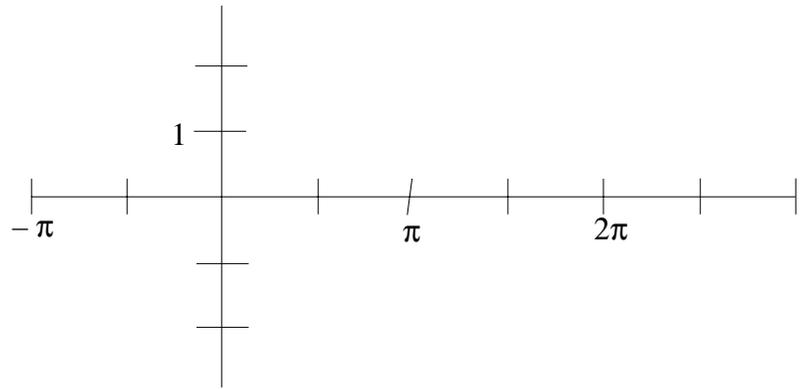
D_E

R_E

Per

Amp

P.S.

II   Draw a sketch of tan x and cot x (15 pts total)
on the supplied axis.

Describe what must be done to
tan x to make it coincide with
cot x.

Prove that your changes would
have the desired effect.

III   Given P_1 starts at $\left(\dfrac{-1}{2} , \dfrac{\sqrt{3}}{2} \right)$ with $\omega_1 = \dfrac{\pi}{4}$ and P_2 starts at $\left(\dfrac{\sqrt{2}}{2} , \dfrac{\sqrt{2}}{2} \right)$ with $\omega_2 = \dfrac{\pi}{3}$

(10 pts tot)

A)   Find t when the two points first concide.

B)   Confirm that P_1 and P_2 do, in fact, have the same coordinates at the t found in part A.

EXTRA CREDIT ------------------------------------   **5 pts**   ---

Given $f(x) = \cos 2x \sin x + \sin 2x \cos x$. Prove $f(x)$ has period $\dfrac{2\pi}{3}$.