

CHAPTER # 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. Show the *x*-values of significant points. You are to do the work for section I *directly on this exam paper* rather than on the “newsprint” as usual. Do **all** work for each problem *on newsprint*, but put answers in the space provided. Each problem in this section is worth 15 points.

A) $A(x) = 2 \cos\left(\frac{3}{4}x - \frac{3\pi}{16}\right) + 1$

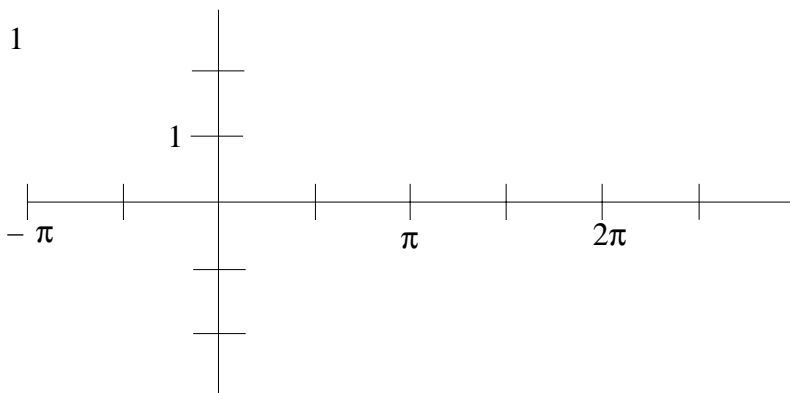
D_A

R_A

Per

Amp

P.S.



B) $B(x) = -\sin\left(\frac{2}{3}x + \frac{2\pi}{9}\right)$

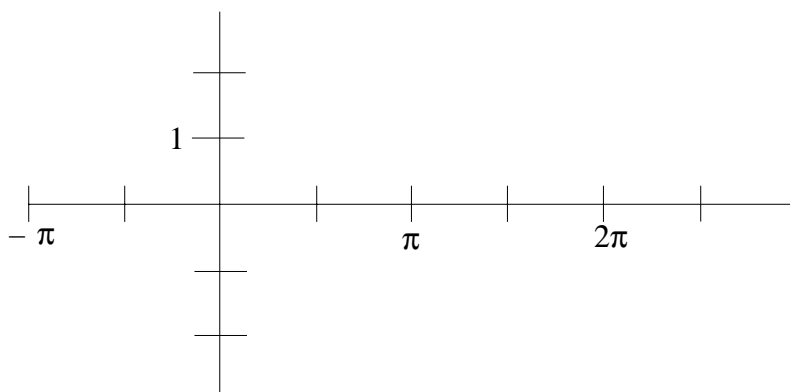
D_B

R_B

Per

Amp

P.S.



C) $C(x) = \sec\left(2x + \frac{\pi}{4}\right) + 1$

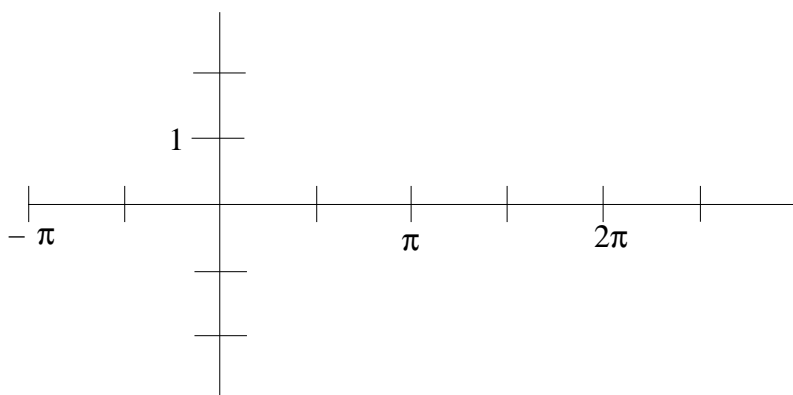
D_C

R_C

Per

Amp

P.S.



D) $D(x) = \cot \frac{4}{3} x$

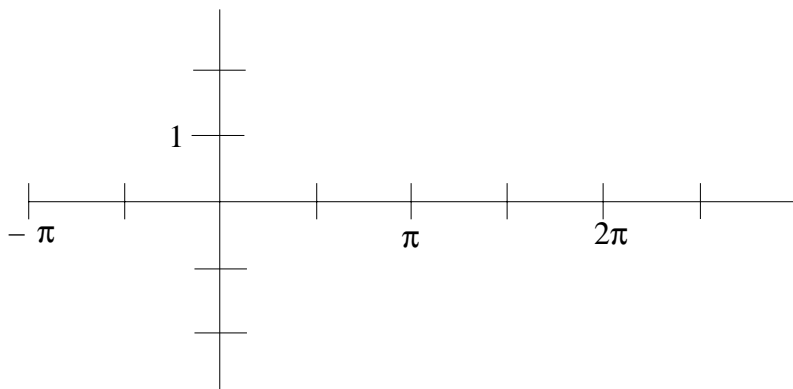
D_D

R_D

Per

Amp

P.S.



E) $E(x) = \csc \frac{2}{3} x$

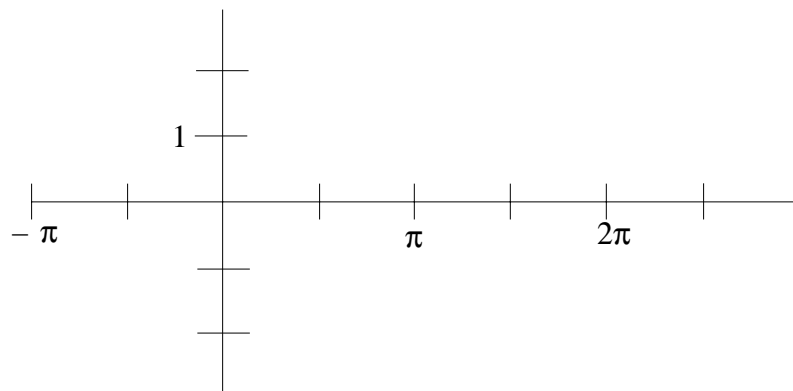
D_E

R_E

Per

Amp

P.S.

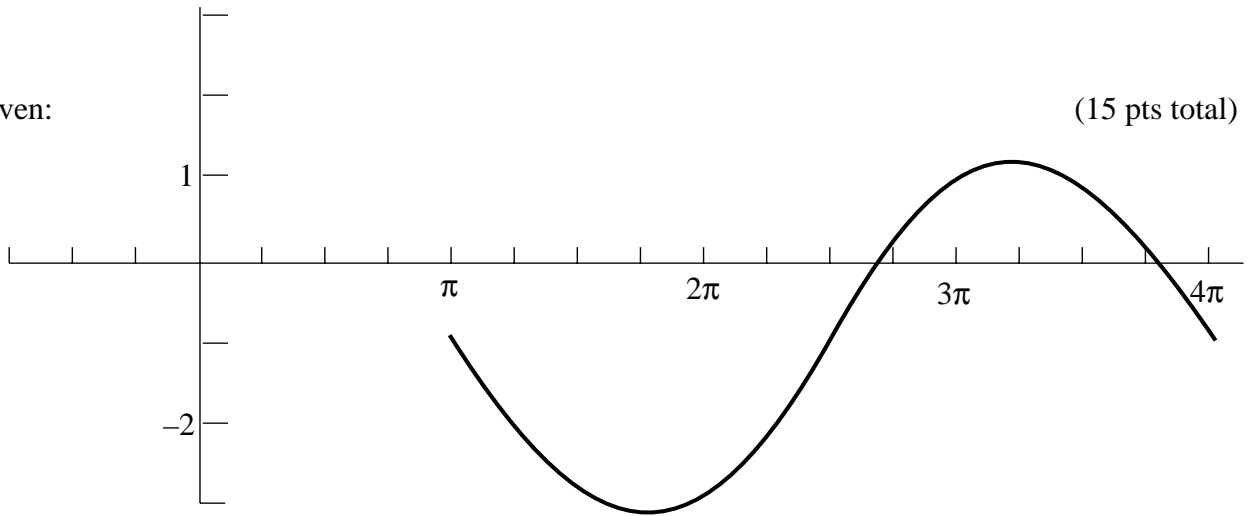


You may write on this portion of the exam. However, you may work on newsprint if you prefer.

II

Given:

(15 pts total)



- A) Also given: $A(x) = a \sin (bx - c) + d$ and $a > 0$ and $-\pi < c < 0$
 Find the values of $a, b, c,$ and $d.$
- B) Also given: $B(x) = a \cos (bx - c) + d$ and $a > 0$ and $c > 0$
 Find the values of $a, b, c,$ and $d.$

III

At time $t = 0,$ point A is at $(1, 0)$ and point B is at $(0, 1).$ $\omega_A = \frac{2\pi}{3}$ and $\omega_B = \frac{\pi}{2}.$

Determine the *coordinates of each of the first three meetings.* (In order to earn full credit, you must be very clear in your steps toward solution. Draw pictures, label things, describe what your are doing, etc.

(10 pts)

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

Sketch *exactly* 1 period of:

$$f(x) = \cos^2 x + 2 \sin x \cos x - \sin^2 x$$

