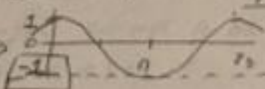


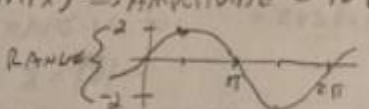
~~Trigonometry~~ Trigonometry EXAM pg 1ne
SPR 2021 II

(I)

(1) D $f(x) = 4\cos(3x) \Rightarrow \text{Amplitude} = |4|$

(2) B $f(x) = \cos(x) \Rightarrow$  TRough LINE

(3) A $f(x) = 2\sin(x) \Rightarrow \text{Domain} = (-\infty, \infty)$

(4) B $f(x) = 2\sin(x) \Rightarrow \text{Amplitude} = |2|$
 $\text{RANGE} = [-2, 2]$

(5) D $\left\{ \begin{array}{l} \text{RANGE of } f(x) = \csc(x) \Rightarrow (-\infty, -1] \cup [1, \infty) \\ \text{RANGE of } g(x) = \sec(x) \Rightarrow (-\infty, -1] \cup [1, \infty) \end{array} \right\}$

(6) B $\left\{ \begin{array}{l} \text{RANGE of } f(x) = \csc(x) \Rightarrow (-\infty, -1] \cup [1, \infty) \\ \text{RANGE of } g(x) = \sec(x) \Rightarrow (-\infty, -1] \cup [1, \infty) \end{array} \right\}$
 SAME

(7) D There is no change to the basic period.

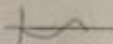
(8) omit

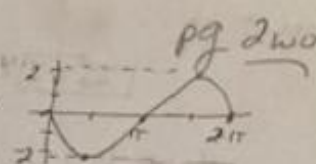
(9) C $\rightarrow \text{BASIC INTERVAL} \Rightarrow 0 \leq 2x < 2\pi$
 $\Rightarrow 0 \leq x < \pi \rightarrow \text{PERIOD} = \pi$

(10) A $f(x) = -3\sin(-2x)$ $\text{Amplitude} = |-3|$

(11) C

(12) B

BASIC SHAPE 
AMPLITUDE = $| -2 |$
VERTICAL SHIFT: NONE
BASIC INTERVAL $0 \leq x < 2\pi$



(13) C

BASIC SHAPE IS FOR " $-\sin(x)$ " \rightarrow NOT NOT B
AMP: IS $2 = | -2 |$ SO NOT A OR D
VERTICAL SHIFT IS $+3$
BASIC INTERVAL IS UNCHANGED = $0 \leq x < 2\pi$
THUS IT IS C

(14) D

BASIC SHAPE IS FOR " $+\cos(x)$ " \rightarrow SO NOT A, B OR C
AMP: IS $2 = | 2 |$
VERTICAL SHIFT: IS UP 1
BASIC INTERVAL IS $0 \leq x < \pi \rightarrow 0 \leq 2x < 2\pi$
THUS IT IS D

(15) OMIT

(16) C

$\cos(x)$ has no asymptotes \rightarrow NOT A
 $\tan(x)$ has asymptotes at ODD MULTIPLES OF $\frac{\pi}{2} \rightarrow$ NOT B
 $\csc(x)$ has asymptotes at integers multiples of π
 $\sec(x)$ has same asymptotes as $\tan(x) \rightarrow$ NOT D

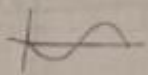
(17) C

BASIC SHAPE IS FOR $\downarrow \sec(x)$ SO NOT A, OR D
AMP IS $| -2 | = 2$
VERTICAL SHIFT: $\uparrow 1$
BASIC INTERVAL $0 \leq x < 2\pi \rightarrow$ NOT B

thus: C

(24) $\frac{4\pi}{3}$ FIXED GEAR WITH THE SAME CENTER pg 401
 ROTATE THROUGH THE SAME ANGLE
 SO THE ANGLE IS $\boxed{\frac{4\pi}{3}}$

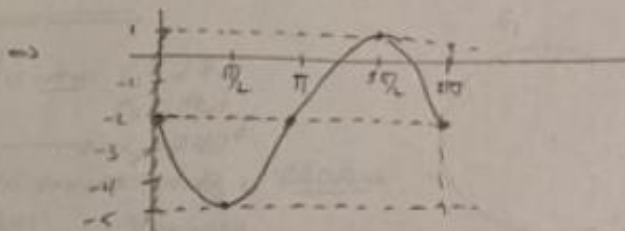
(25) $f(x) = -2 - 3\sin(x)$

BASIC SHAPE = 


Amplitude: $|-3|$

Vertical Shift: Down 2

BASIC INTERVAL: $0 \leq x < 2\pi$



(26) $f(x) = 2\cos(2x - \pi)$

BASIC SHAPE 

Amplitude $|2|$

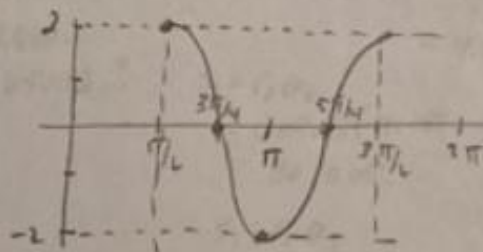
VERTICAL SHIFT: NONE

BASIC INTERVAL:

$$0 \leq 2x - \pi < 2\pi$$

$$\Rightarrow \pi \leq 2x < 3\pi$$

$$\Rightarrow \frac{\pi}{2} < x < \frac{3\pi}{2}$$



#27

$$f(x) = \frac{1}{2} \sec\left(\frac{1}{2}x\right)$$

ASSOCIATED FUNCTION

$$g(x) = \frac{1}{2} \cos\left(\frac{1}{2}x\right)$$

BASIC SHAPE:

$$\text{AMPLITUDE: } \left|\frac{1}{2}\right|$$

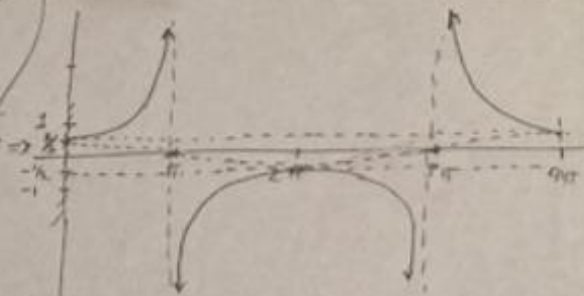
VERTICAL SHIFT: NONE

BASIC INTERVAL:

$$0 \leq \frac{1}{2}x < 2\pi$$

$$\Rightarrow 0 \leq x < 4\pi$$

Pg 516



#28

Given: $r_1 = 27.7$

$$r_2 = 19.1$$

$$\alpha_2 = 240^\circ$$

MUST CONVERT TO θ_2 IN RADIANS

PLAN:

VALUES:

$$\alpha_2 \rightarrow \theta_2$$

$$\alpha_2 = 240^\circ \rightarrow \theta_2 = 4.188...$$

$$\rightarrow s_2$$

$$\rightarrow s_2 = 80.005...$$

$$\leftrightarrow s_1$$

$$\leftrightarrow s_1 = 80.005...$$

$$\rightarrow \theta_1$$

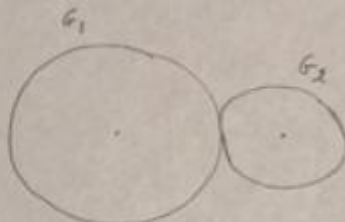
$$\rightarrow \theta_1 = 2.882...$$

$$\rightarrow \alpha_1$$

$$\rightarrow \alpha_1 = 165.482...$$

SO WE USE

$$\alpha_1 = 165.5^\circ$$



WORK:

$$\frac{180}{240} = \frac{\pi}{x} \Rightarrow 180x = 240\pi$$

$$\Rightarrow x = \frac{240\pi}{180} = 4.188...$$

$$s_2 = r_2 \theta_2$$

$$= (19.1)(4.188...)$$

$$= 80.005...$$

$$s_1 = r_1 \theta_1$$

$$\Rightarrow (80.005...) = (27.7) \theta_1$$

$$\Rightarrow \theta_1 = \frac{80.005...}{27.7}$$

$$= 2.882 \text{ (RADIANS!)}$$

$$\frac{180}{x} = \frac{\pi}{2.882...}$$

$$\Rightarrow x = \frac{(180)(2.882...)}{\pi} = 165.482...$$