SOLUTIONS

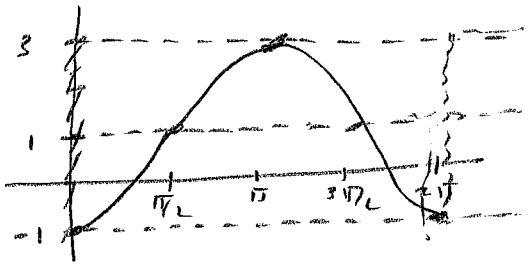
① $f(x) = -2\cos(x) + 1$

shift: ↑1

shape: ∩

amp: $|-2| = 2$

Standard Interval: $0 \le x < 2\pi$



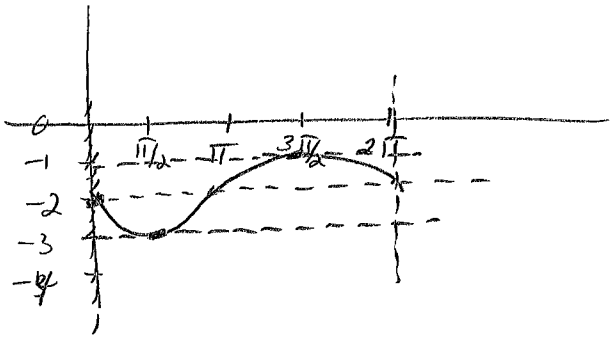
② $f(x) = -\sin(x) - 2$

shift: ↓2

shape: ∩

amp: $|-1| = 1$

STANDARD Interval: $0 \le x < 2\pi$



③ $f(x) = -2\sin(\frac{1}{2}x)$

shift: NONE

shape: ∩

amp: $|-2| = 2$

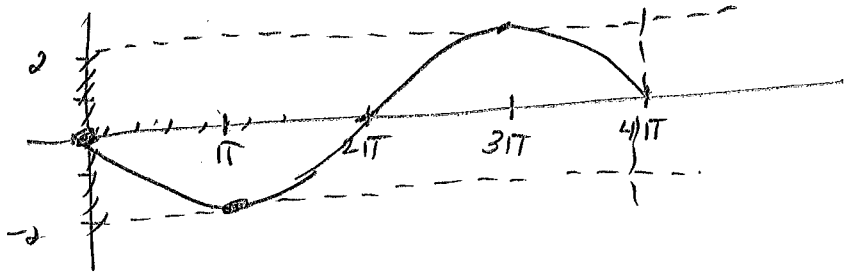
STAND. INT. $0 \le x < 4\pi$

↳ $0 \le \frac{1}{2}x < 2\pi$

$\Rightarrow 2(0) \le 2(\frac{1}{2}x) < 2(2\pi)$

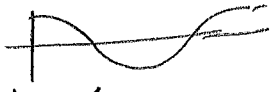
$\Rightarrow 0 \le x < 4\pi$

⇓



④. $f(x) = \cos(2x)$

SHIFT: NONE

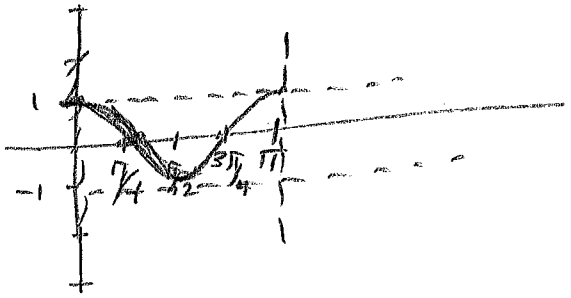
SHAPE: 

AMP: $|1| = 1$

STANDARD INTERVAL $0 \le 2x < 2\pi$

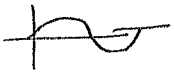
$\Rightarrow \frac{1}{2}(0) \le \frac{1}{2}(2x) < \frac{1}{2}(2\pi)$

$\Rightarrow 0 \le x < \pi$



⑤. $f(x) = \sin(x + \pi) + 1$

SHIFT: $\leftarrow \pi$

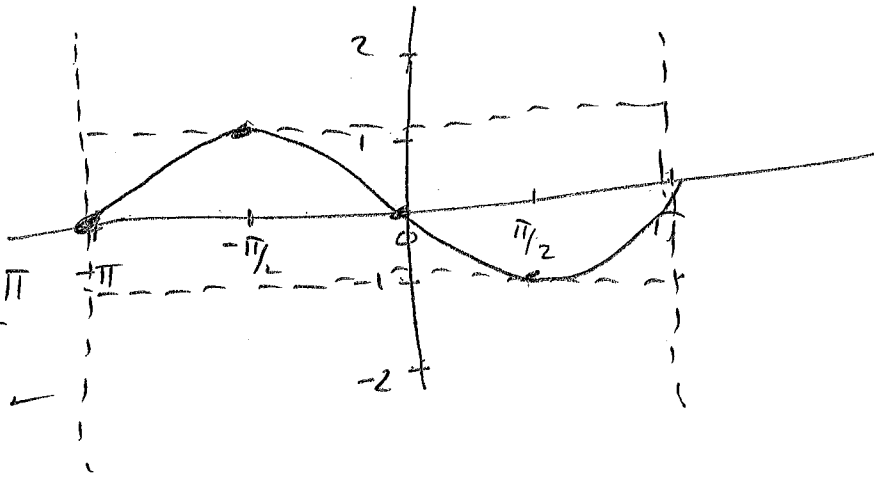
SHAPE: 

AMP: $|1| = 1$

STANDARD INT. $0 \le x + \pi < 2\pi$

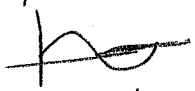
$-\pi \quad -\pi \quad -\pi$

$\Rightarrow -\pi \le x < \pi$



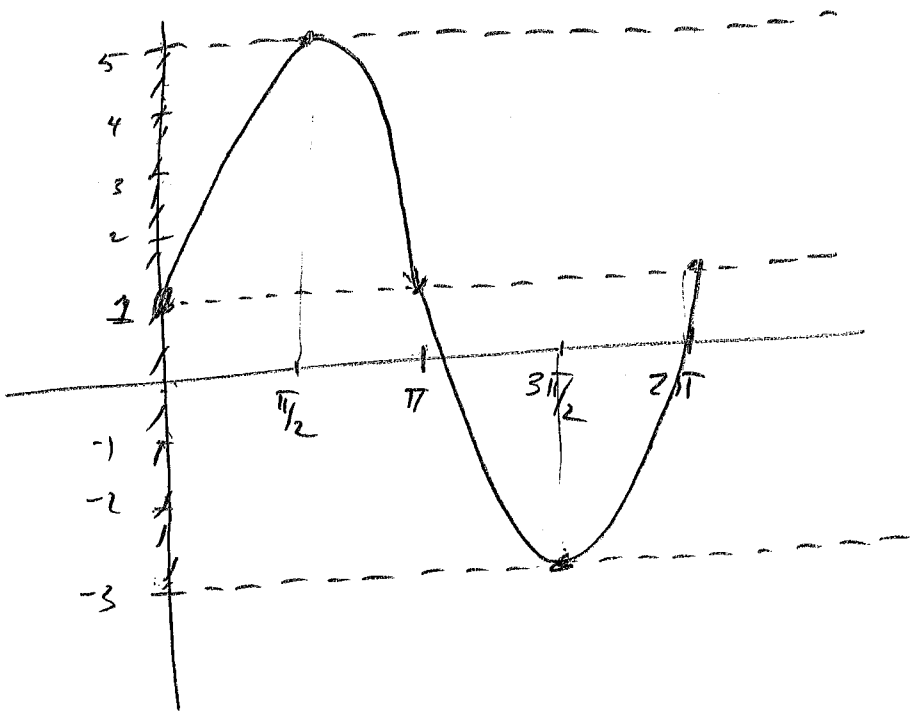
⑥. $f(x) = 4\sin(x) + 1$

shift: $\uparrow 1$

SHAPE: 

amp: $|4| = 4$

STAND. INT. $0 \le x < 2\pi$

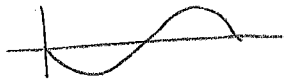


pg 3 three

7. $f(x) = -3\csc(x) - 3$

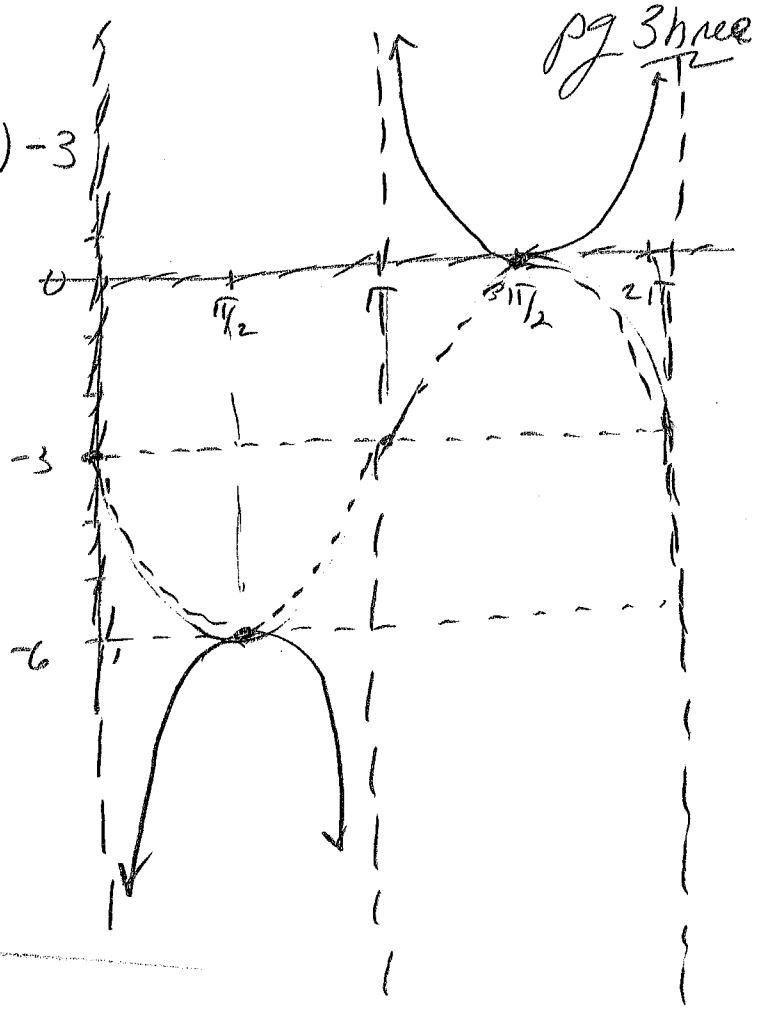
↳ sketch $f(x) = -3\sin(x) - 3$

shift: ↓3

shape 

amp: $|-3| = 3$

stand. INT. $\Rightarrow 0 \le x < 2\pi$

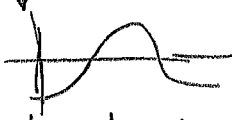


8. $f(x) = -\sec(2x) - 3$

↳ sketch:

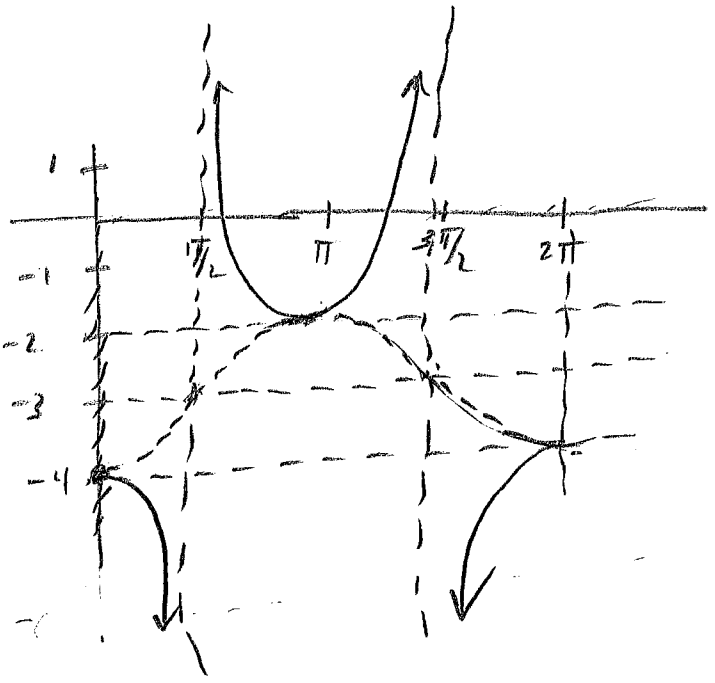
$f(x) = -\cos(2x) - 3$

shift: ↓3

shape 

Amp: $|-1| = 1$

STANDARD INTERVAL: $0 \le x \le 2\pi$

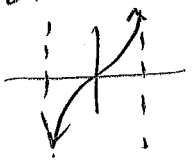


pg 4 our

(9.) $f(x) = \tan\left(\frac{1}{4}x\right)$

(*) SHIFT: NONE

(*) SHAPE:



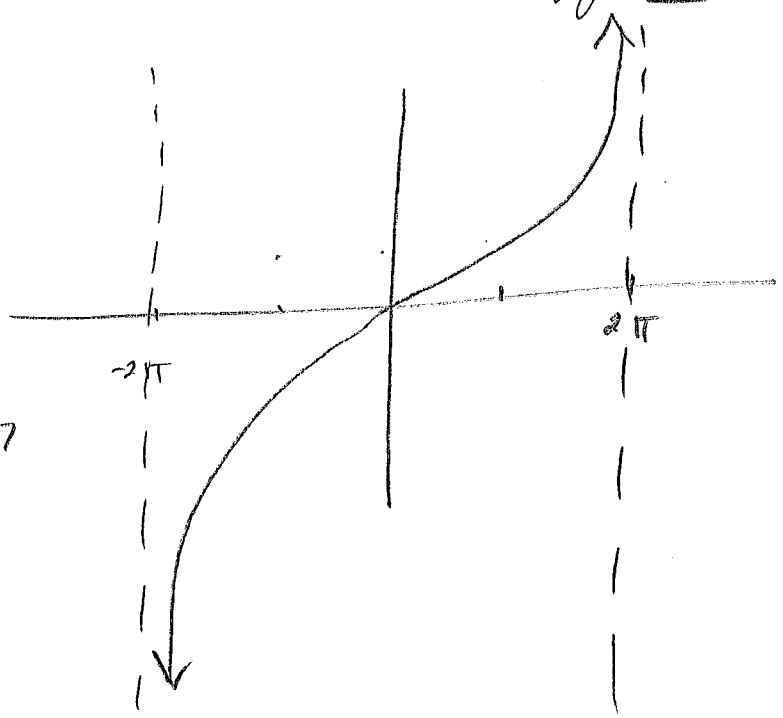
(*) AMP: 1

(*) STANDARD INTERVAL

↳ $-\frac{\pi}{2} < \frac{1}{4}x < \frac{\pi}{2}$ ⟹

$\Rightarrow 4\left(-\frac{\pi}{2}\right) < 4\left(\frac{1}{4}x\right) < 4\left(\frac{\pi}{2}\right)$

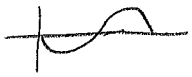
$\Rightarrow -2\pi < x < 2\pi$ ✓



(10.) $f(x) = -\sin(2x)$

shift: NONE

shape:

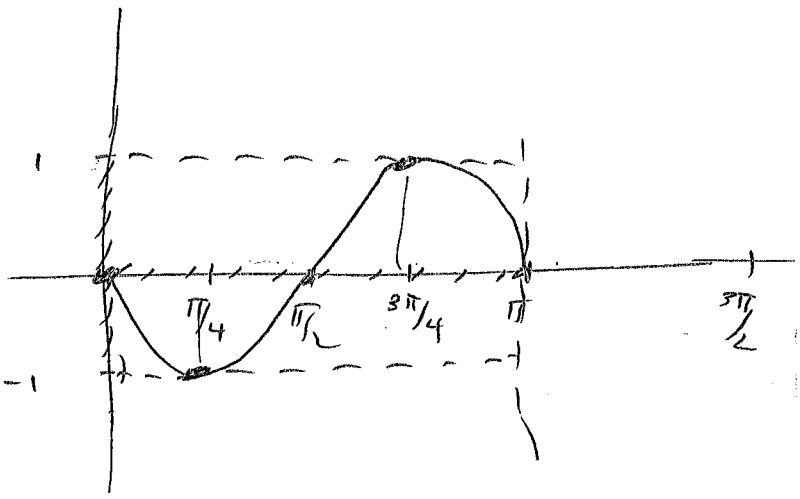


amp: $|-1| = 1$

STAND. INT. $0 \le 2x < 2\pi$ ⟹

$\Rightarrow \frac{1}{2}(0) \le \frac{1}{2}(2x) < \frac{1}{2}(2\pi)$

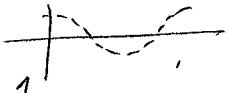
$\Rightarrow 0 \le x < \pi$ ✓



(11.) $f(x) = \sec(x-\pi) - 3$

SHIFT: → π ↓ 3 ↳ $f(x) = \cos(x-\pi) - 3$

SHAPE:



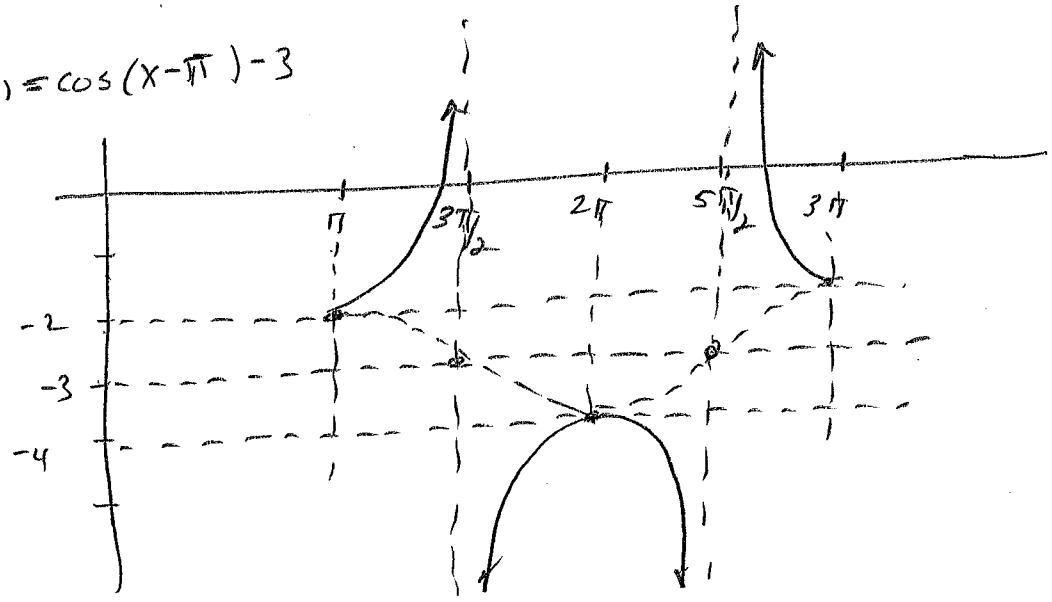
amp: $|1| = 1$

INTERVAL

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

$+\pi \quad +\pi \quad +\pi$ ⟹

$\rightarrow \pi \le x < 3\pi$



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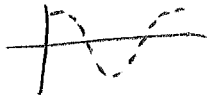
(12). $f(x) = 4\sec(x) + 1$

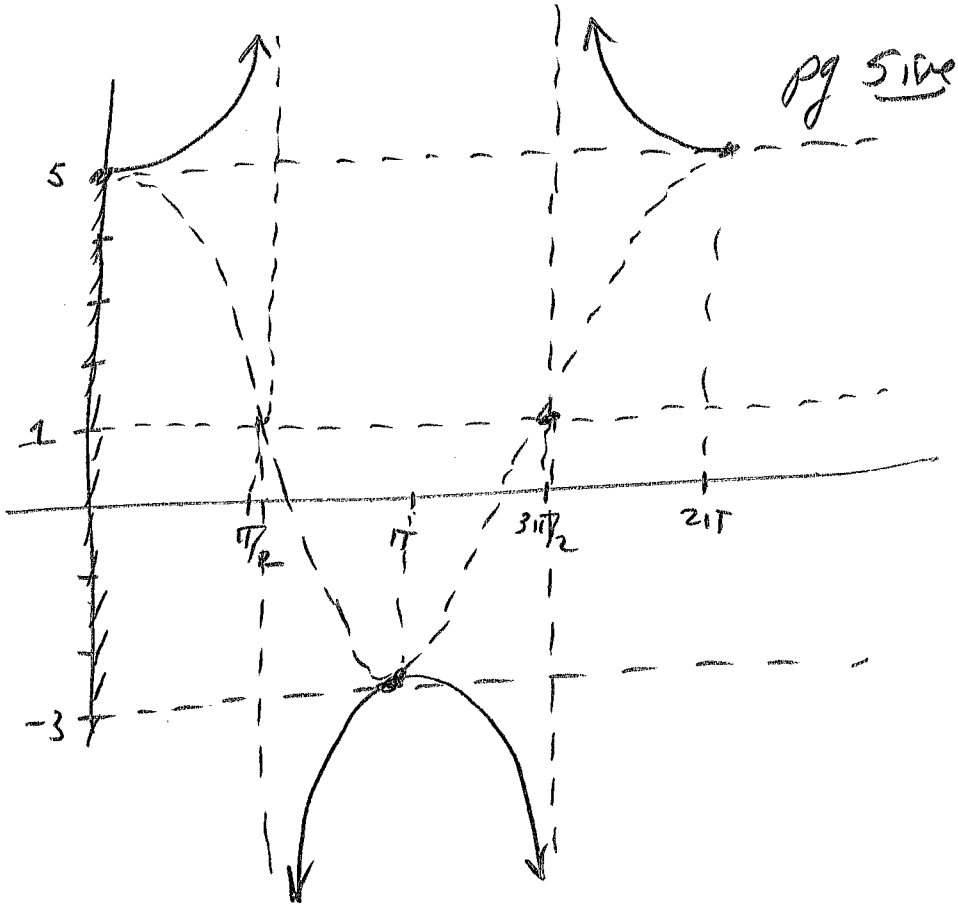
↳ $f(x) = 4\cos(x) + 1$

shift: ↑ 1

shape: 

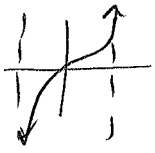
amp: $|4| = 4$

interval $0 \leq x < 2\pi$



(13). $f(x) = \tan(x - \pi/4)$

shift: → $\pi/4$

shape: 

amp: 1

interval: $-\frac{\pi}{2} < x - \pi/4 < \pi/2$

$\Rightarrow -\frac{\pi}{2} + \frac{\pi}{4} < x - \frac{\pi}{4} + \frac{\pi}{4} < \frac{\pi}{2} + \frac{\pi}{4}$

$\Rightarrow -\frac{\pi}{4} < x < \frac{3\pi}{4}$