Honors PreCalc '21-22 Name_____
Chapter 2 Test--MC
Calculator NOT Allowed Score _____

1. Given $g(x)=2+3\sec\left[\frac{\pi}{8}(x+1)\right]$, which of the following statements is true?

I. The amplitude of $g(x)$ is 3.
II. The period of $g(x)$ is 8.
III. The phase shift is 1.

(a) I only (b) II only (c) III only

(d) I and II only (e) II and III

---

2. On the graph of $y=-\tan x$, as x increases on $x\in[0,\pi]$, the function y

(a) decreases (b) is constant (c) increases

(d) decreases, then increases (e) increases, then decreases

---

3. What is the smallest positive x-value for which $y=3-2\cos\left[\frac{\pi}{8}(x+3)\right]$ has a point at a maximum?

(a) 1 (b) 5 (c) 9 (d) 13 (e) 17

---

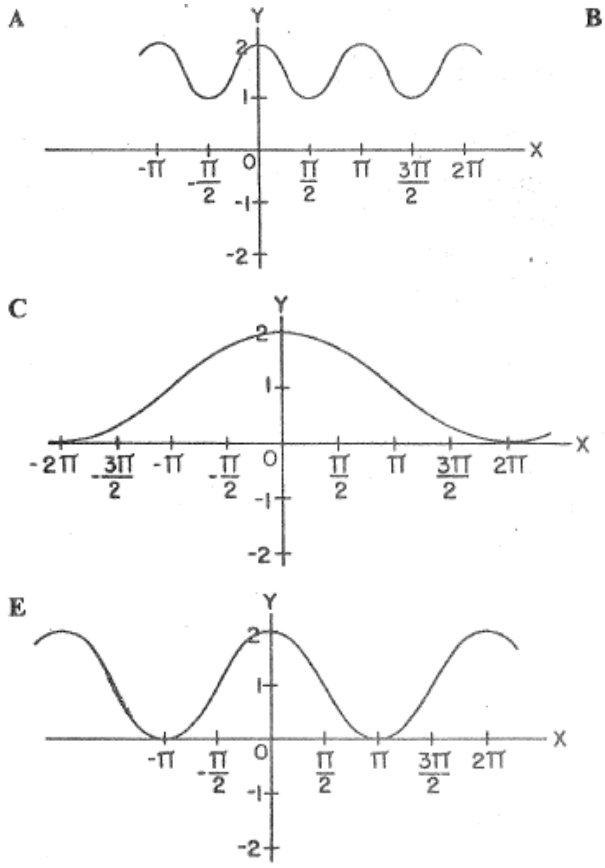
4. The price of gasoline over the past year seems to have varied sinusoidally with time. On June 10th (day 161), the cost was its highest, which was \$3.97. On December 10th (day 344), the cost was its lowest, which was \$2.97. What would the vertical shift of the function be?

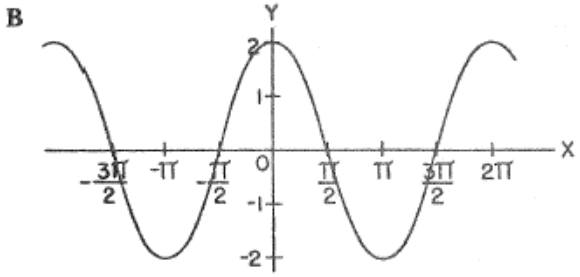
(a) \$3.97 (b) \$2.97 (c) \$3.47

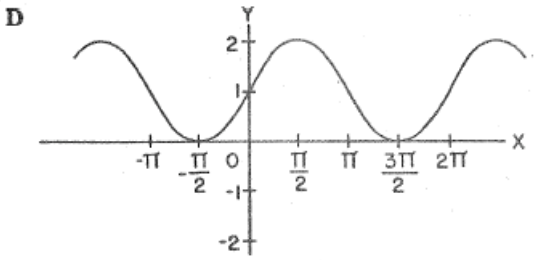
(d) \$1.97 (e) \$1.00

---

5. Which of the following is the graph of $y = 1 - \cos\left[\frac{1}{2}(x + 2\pi)\right]$?







(a) A (b) B (c) C (d) D (e) E

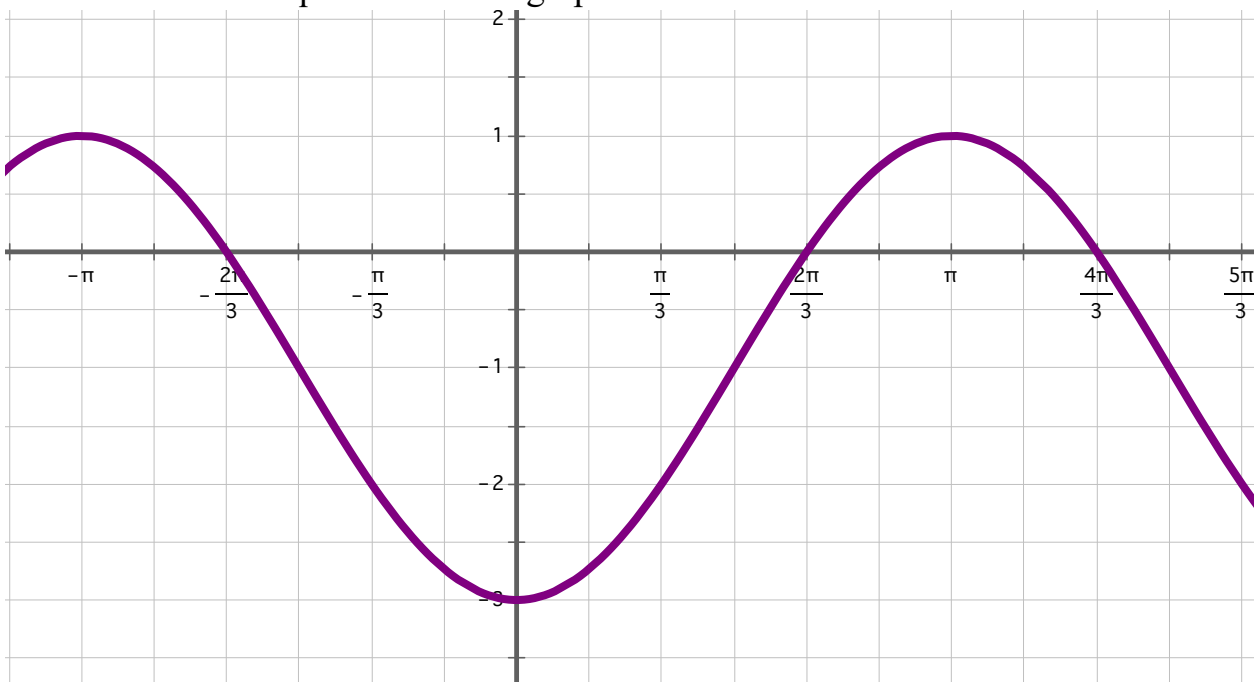
Honors PreCalc '21-22 Name_____
Chapter 2 Test--FR
Calculator required Score _____
Round all answers to 3 decimals

6. Sketch one cycle of $y=-1+3\cos\left[\frac{\pi}{6}(x+2)\right]$

7. Sketch one cycle of $y=1+\frac{1}{3}\cot\left[\frac{\pi}{6}(x-1)\right]$

8. Sketch one cycle of $y = -2 + \sec\left[\frac{1}{5}(x - \pi)\right]$

9. Find a sine equation for this graph:



10. If $H(x)=-1+3\cos\left[\frac{\pi}{6}(x+2)\right]$, find the first three negative values of x where $H(x)=-1.3$.

11. Wind farming is a thriving business in the Montezuma Hills, Solano County, just outside of Rio Vista. There are several windmill systems harnessing wind-power, converting it to electricity, and selling it to PG&E. Over the course of a year, the daily average wind speed varies sinusoidally with the month. In mid-January, the windspeed is at its lowest at 6.1 mph. By mid-July, it reaches a high of 9.5 mph. Consider mid-January to be $t = 1$ and mid-July to be $t = 7$.

a. Sketch the graph of this sinusoidal function

b. Write the particular equation expressing the daily average wind speed.

c. What is the daily average wind speed in mid-April? How about at the **end** of October?

d. When is the second time during the year that the daily average wind speed is 7.8 mph?