

MATH ANALYSIS I HONORS

REVIEW sec. 8.1-8.3 quiz 55 pts

Trigonometric functions

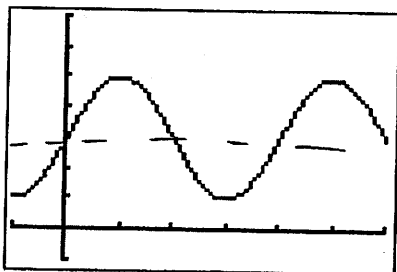
NO CALCULATORS (except #9)

NAME _____

DATE _____

PERIOD _____

1. Write both a sine and a cosine equation for the following function.



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

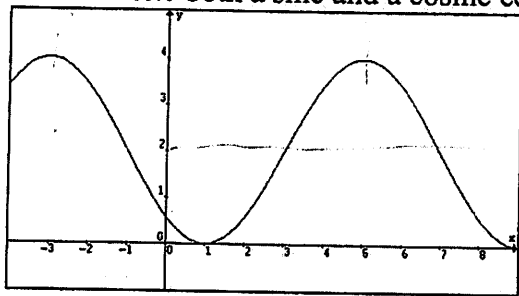
$$y = 2 \sin\left(\frac{\pi}{2}x\right) + 3$$

$$A = 2$$

$$B = \frac{\pi}{2}$$

$$K = 3$$

2. Write both a sine and a cosine equation for the trigonometric graph.



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

$$y = 2 \cos\left(\frac{\pi}{4}(x-5)\right) + 2$$

$$y = 2 \sin\left(\frac{\pi}{4}(x-3)\right) + 2$$

$$y = -2 \sin\left(\frac{\pi}{4}(x+1)\right) + 2$$

$\frac{2\pi}{4}$

$$A = 2$$

$$B = \frac{\pi}{4}$$

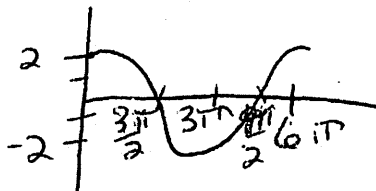
$$K = 2$$

3. Sketch the graph of $y = 2 \cos(1/3 x)$

Label the x and y axes.

Find the following:

Amplitude 2
 Period 6π
 Axis of the wave 0
 Minimum -2
 Maximum 2
 Horizontal slide 0



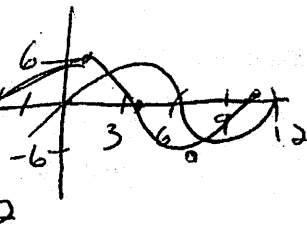
$(0, 2)$
 $(\frac{3\pi}{2}, 0)$
 $(3\pi, -2)$
 $(\frac{9\pi}{2}, 0)$
 $(6\pi, 2)$

4. Sketch the graph of $y = 6 \sin\left(\frac{\pi}{6}(x+2)\right)$

Label the x and y axes.

Find the following:

Amplitude 6
 Period 12
 Axis of the wave 0
 Minimum -6
 Maximum 6
 Horizontal slide left 2



$(-2, 0)$
 $(-2, 0)$
 $(3, 6)$
 $(3, 6)$
 $(6, 0)$
 $(6, 0)$
 $(9, -6)$
 $(9, -6)$
 $(12, 0)$
 $(12, 0)$
 $(10, 0)$

$$\frac{2\pi \cdot 6}{\pi} = 12$$

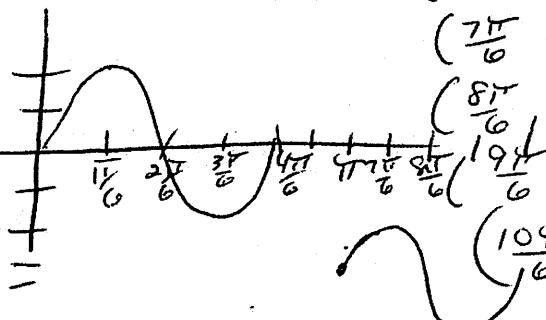
5. Sketch the graph of $y + 4 = 2 \sin 3(x - \pi)$

Label the x and y axes.

Find the following:

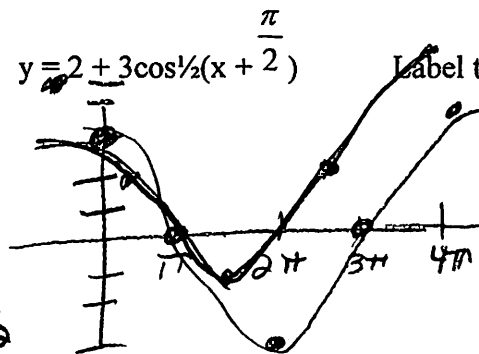
Amplitude 2
 Period $2\pi/3$
 Axis of the wave -4
 Minimum -6
 Maximum -2
 Horizontal slide Right pi

$(0, 0)$
 $(\frac{\pi}{6}, 2)$
 $(\frac{2\pi}{6}, 0)$
 $(\frac{3\pi}{6}, -2)$
 $(\frac{4\pi}{6}, 0)$



$(\pi, -4)$
 $(\frac{7\pi}{6}, -2)$
 $(\frac{8\pi}{6}, -4)$
 $(\frac{9\pi}{6}, -6)$
 $(\frac{10\pi}{6}, -4)$

6. Sketch the graph of $y = 2 + 3\cos\frac{1}{2}(x + \frac{\pi}{2})$
 Find the following:
 Amplitude 3
 Period 4π
 Axis of the wave 2
 Minimum -1
 Maximum 5
 Horizontal slide Left $\pi/2$



Label the x and y axes.

- $(0, 3)$ $(-\frac{\pi}{2}, 5)$
 $(\pi, 0)$ $(\frac{\pi}{2}, 2)$
 $(2\pi, 3)$ $(\frac{3\pi}{2}, -1)$
 $(3\pi, 0)$ $(\frac{5\pi}{2}, 2)$
 $(4\pi, 3)$ $(\frac{7\pi}{2}, 5)$

7. Solve for all angles $0 \leq x < 2\pi$. (No calculator)

a) $\sqrt{2} \tan x = \sqrt{6}$

$\frac{\pi}{3}, \frac{4\pi}{3}$

b) $5 + 4 \cos x = 3$

$\frac{2\pi}{3}, \frac{4\pi}{3}$

c) $\sqrt{3} \csc x = 2$

$\frac{\pi}{3}, \frac{2\pi}{3}$

d) $\frac{9 \sec x}{5} = \frac{1}{20}$

$\frac{3 \sec x}{5} = \frac{1}{20}$
 $\sec x = \frac{1}{12}$
 $\cos x = 12$

No solution

e) $8 - 6 \cot x = 14$

$\frac{3\pi}{4}, \frac{7\pi}{4}$

f) $13 + \sin x - 11 = 2$

$\pi, 2\pi$

8. Find the equation of the line described: (No Calculator)

a) Inclination = 60°
 y-intercept = 14

$y = \sqrt{3}x + 14$

b) Inclination = 135°
 contains $(-4, 7)$

$y = -x + 3$

9. Solve for the angles $0^\circ \leq x < 360^\circ$ using a calculator.

a) $7 + 4 \sin x = 6$

$4 \sin x = -1$

-14.477°

345.523°
 194.477°

b) $\csc x - \frac{16}{16} = \frac{5}{16}$

$\csc x = \frac{21}{16}$
 $\sin x = \frac{16}{21}$

2.729°
 177.271°

c) $\frac{8 \cot x}{3} = \frac{3}{8}$

$\cot x = \frac{9}{4}$
 $\tan x = -\frac{4}{9}$

-23.962°
 336.038°
 156.038°

d) $5 \sec x = -\frac{13}{5}$

$\sec x = -\frac{13}{25}$
 $\cos x = -\frac{25}{13}$

112.619°
 247.381°

10. Find the inclination of each line: Using a calculator, round to the nearest tenth of a degree.

a) The line $4x - 9y = 7$

23.9°

b) The line joining $(-6, 2)$ and $(1, -4)$.

139.4°

c) A line parallel to $y = -5x - 4$

101.31°

d) A line perpendicular to $8x + 3y = 16$

20.5°