

Dugopolski's *Trigonometry* Chapter 2 Test -- Form A

Name:

Sketch at least one cycle of the graph of each function. Draw and label the axes appropriately. Determine the period, range, and amplitude for each function.

1. $y = \sin\left(x - \frac{\pi}{4}\right)$ period: ______ range: ______ amplitude: ______ 2. $y = \cos(2x)$

> period: _____ range: _____ amplitude: _____

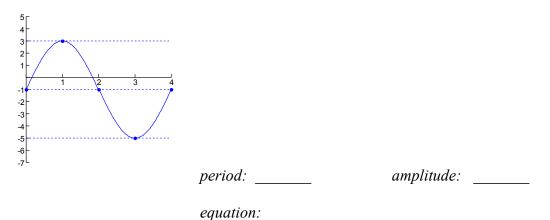
3. $y = -2\sin(x)$

period: _____ range: _____ amplitude: _____

4. $y = \cos(x) + 1$

period:	
range:	
amplitude:	

5. Determine the amplitude and period for the sine curve in the accompanying graph. Write its equation in the form $y = A \sin(B[x - C]) + D$.



6. $y = \tan(x - \pi)$ period: _______ asymptotes: ______ range: ______ 7. $y = -\sec(x) + \pi$ period: ______ asymptotes: ______ range: ______ 8. $y = \csc(3x)$

period:	
asymptotes:	
range:	

Solve each problem.

9. Graph the function $y = \sin x - \cos x$ for x between -2π and 2π using the technique of adding the y-coordinates. Draw and label the axes appropriately.

10. The population in a particular herd of antelope in South Africa oscillates between approximately 500 and 800. The maximum number can be found at the beginning of January, while the minimum number of can be found at the beginning of July. Express the population as a function of time in the form $y = A \sin[B(x - C)] + D$, where January is counted as month one (x = 1).

Dugopolski's *Trigonometry* Chapter 2 Test -- Form B

Name:

Sketch at least one cycle of the graph of each function. Draw and label the axes appropriately. Determine the period, range, and amplitude for each function, as required.

1. $y = \sin(x + \frac{\pi}{2})$

period: _____ range: _____ amplitude: _____

2. $y = \cos(4x)$

period: _____ *range:* _____ *amplitude:* _____

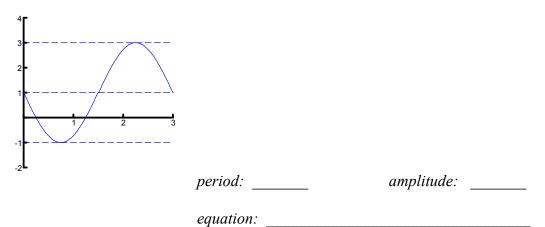
3. $y = -3\sin(x)$

period: _____ range: _____ amplitude: _____

4. $y = \sin(x) - 2$

period: _____ range: _____ amplitude: _____

5. Determine the amplitude and period for the sine curve in the accompanying graph. Write its equation in the form $y = A \sin(B [x - C]) + D$.



6. $y = 3 \csc (2x)$ period: _______ asymptotes: ______ range: ______ 7. $y = \frac{1}{3} \sec (x) + 1$ period: ______ asymptotes: ______ range: ______ 8. $y = \tan \left(x - \frac{\pi}{4}\right)$ period:

periou	
asymptotes:	
range:	

Solve each problem.

9. Graph the function $y = \sin x + \cos x$ for x between -2π and 2π using the technique of adding the y-coordinates. Draw and label the axes appropriately.

10. The population in a particular herd of antelope in South Africa oscillates between approximately 400 and 900. The maximum number can be found at the beginning of February, while the minimum number of can be found at the beginning of August. Express the population as a function of time in the form $y = A \sin[B(x - C)] + D$, where January is counted as month one (x = 1).

Dugopolski's *Trigonometry* Chapter 2 Test -- Form C

Name:

Sketch at least one cycle of the graph of each function. Draw and label the axes appropriately. Determine the period, range, and amplitude for each function, as required.

1. $y = \sin\left(x - \frac{\pi}{3}\right)$ period: ______ range: _____

amplitude: _____

 $2. \qquad y = \cos\left(\frac{1}{2}x\right)$

period: _____ *range:* _____ *amplitude:* _____

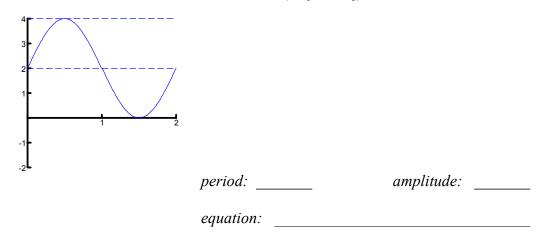
3. $y = -2\cos(x)$

period: _____ range: _____ amplitude: _____

4. $y = \sin(x) + 1$

period: _____ range: _____ amplitude: _____

5. Determine the amplitude and period for the sine curve in the accompanying graph. Write its equation in the form $y = A \sin(B[x - C]) + D$.



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6. $y = 2 \sec (x) + 1$ period: _______ asymptotes: ______ range: ______ 7. $y = \tan \left(\frac{1}{2}x\right)$ period: ______ asymptotes: ______ 8. $y = -2 \csc \left(x - \frac{\pi}{4}\right)$ period: ______ asymptotes: ______

Solve each problem.

range:

30

9. Graph the function $y = 2 \sin x - \cos x$ for x between -2π and 2π using the technique of adding the y-coordinates. Draw and label the axes appropriately.

10. The population in a particular herd of antelope in South Africa oscillates between approximately 300 and 900. The maximum number can be found at the beginning of March, while the minimum number of can be found at the beginning of September. Express the population as a function of time in the form $y = A \sin[B(x - C)] + D$, where January is counted as month one (x = 1).

Dugopolski's *Trigonometry* Chapter 2 Test -- Form D

Name:

Sketch at least one cycle of the graph of each function. Draw and label the axes appropriately. Determine the period, range, and amplitude for each function, as required.

1. $y = 3\sin(x)$

period: _____ *range:* _____ *amplitude:* _____

2. $y = \cos(\pi x)$

period: _____ *range:* _____ *amplitude:* _____

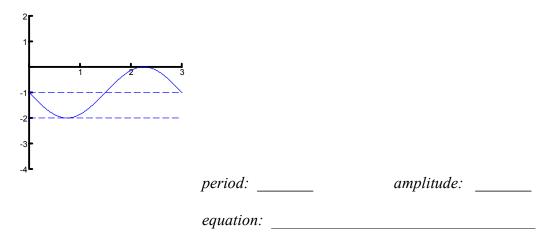
3. $y = \cos(x + \frac{\pi}{4})$

period:	
range:	
amplitude:	

4. $y = -\sin(x) + 2$

period: _____ range: _____ amplitude: _____

5. Determine the amplitude and period for the sine curve in the accompanying graph. Write its equation in the form $y = A \sin(B[x - C]) + D$.



6. $y = \sec (2x) + 1$ period: ________ asymptotes: ______ range: ______ 7. $y = \tan \left(x - \frac{\pi}{6}\right)$ period: ______ asymptotes: ______ 8. $y = \frac{1}{2} \csc (x)$ period: ______ asymptotes: ______

range: _____

Solve each problem.

9. Graph the function $y = \sin x + 2\cos x$ for x between -2π and 2π using the technique of adding the y-coordinates. Draw and label the axes appropriately.

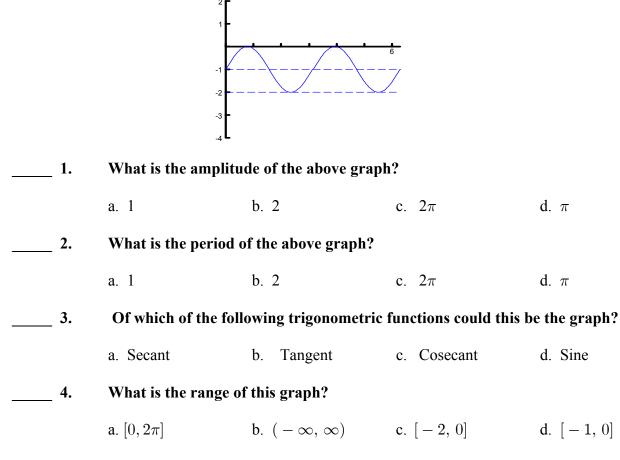
10. The population in a particular herd of antelope in South Africa oscillates between approximately 200 and 500. The maximum number can be found at the beginning of February, while the minimum number of can be found at the beginning of August. Express the population as a function of time in the form $y = A \sin[B(x - C)] + D$, where January is counted as month one (x = 1).

Dugopolski's *Trigonometry* Chapter 2 Test -- Form E

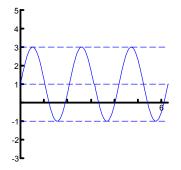
Name:

Multiple Choice: Choose the best answer for each.

Use the following graph, shown for $0 \le x \le 2\pi$, to answer questions 1 - 4.



Use the following graph, shown for $0 \le x \le 2\pi$, to answer questions 5.



5.

Which of the following could be the equation for the above graph?

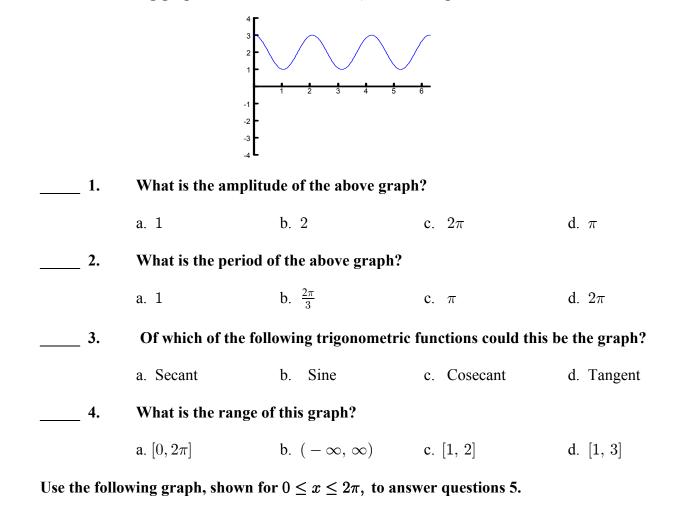
a. $y = -2 \sin (2(x-1)) + 1$ b. $y = 2 \sin (3x) + 1$ c. $y = 2 \sin (3(x+1))$ d. $y = 4 \sin (3(x-1))$

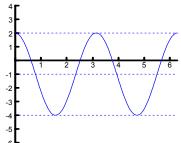
6.	What are the vertical asymptotes for the graph of $y = \tan x$? (k is an integer				k is an integer.)
	a. $x = k\pi$ b. $x = \frac{\pi}{2} + k\pi$		d.	c. $x = \frac{\pi}{2}$ $x = \frac{\pi}{2} + \frac{\pi}{2}k$	k
7.	What is the frequency of the sine wave determined by $y = \sin{(300\pi x)}$, where x				
	is time in seconds? a. 300	b. $\frac{1}{150}$	c. $\frac{1}{300}$	π	d. 150
8.	the equation $v = -$	ood at a value in the 1 - $3\cos(4\pi t) + 3$, wher . What is the rodent'	e v is in	centimeters p	er second and
	a. 15 bpm	b. 120 bpm	c . 60) bpm	d. 180 bpm
9.	What is the domain	$f of y = \cot(x)?$			
	a. $\{x \mid x \neq k\pi\}$ b. $\{x \mid x \neq \frac{\pi}{2} +$			$ \begin{aligned} & \{x \mid x \neq \frac{\pi}{2}k\} \\ & \{x \mid x \neq \frac{\pi}{2} + \end{aligned} $	$rac{\pi}{2}k\}$
10.	If we know that the what else do we kn	e graph of $y = A \sin[h]$ ow?	B(x-C))] has an <i>x</i> -int	tercept at $x = \frac{\pi}{4}$,
	b. There is a vertic. There is a maximum	r x-intercept at $\frac{\pi}{4} + 2\pi$ cal asymptote of $x = \frac{\pi}{4}$ mum value at $x = \frac{5\pi}{4}$. mum value at $x = -\frac{5\pi}{4}$	$\frac{\pi}{4}$ for the	graph of $y = A$	$A \operatorname{csc}[B(x-C)].$
11.		ving equations will sh	ift $y = c$	os (x) two uni	ts up and $\frac{\pi}{6}$ units
	to the right? a. $y = \cos(2x + b)$ b. $y = 2\cos(x + b)$	$+\frac{\pi}{6})$ $-\frac{\pi}{6})$	c. d.	$y = 2 + \cos\left(\frac{\pi}{6}x - \frac{\pi}{6}x\right)$	$\left(x - \frac{\pi}{6} \right) + 2 \right)$
12.	$\tan\left(\frac{3\pi}{2}\right) =$				
	a1	b. 1	c. 0		d. undefined
13.	If $y = -\frac{2}{3}\cos\left(3x\right)$	$-\frac{\pi}{2}$) + 1, then its per	riod is:		
	a. $\frac{2\pi}{3}$	b. $\frac{\pi}{3}$	C. $\frac{\pi}{6}$		d. $\frac{3\pi}{2}$
14.	If $y = -\frac{2}{3}\cos\left(3x\right)$	$-rac{\pi}{2}ig)+1$, then its ra	nge is:		
	a. $\left[\frac{1}{3}, \frac{5}{3}\right]$	b. $\left[-\frac{2}{3}, \frac{2}{3}\right]$	c. [-	$\left[\frac{\pi}{6}, \frac{11}{6}\right]$	d. [−1, 1]

Name: _____

Multiple Choice: Choose the best answer for each.

Use the following graph, shown for $0 \le x \le 2\pi$, to answer questions 1 - 4.





5.

Which of the following could be the equation for the above graph?

a.
$$y = -3\cos(2(x-1)) - 1$$

b.
$$y = 2\cos(3x) - 1$$

c.
$$y = 3\cos(2x) - 1$$

d. $y = 3 \cos(2x) - 1$ d. $y = 6 \cos(3(x - 1))$

6.	What are the vertical asymptotes for the graph of $y = \cot x$? (k is an integer.)			x? (k is an integer.)
	a. $x = k\pi$ b. $x = \frac{\pi}{2} + k\pi$	-	d. $c. x = \frac{\pi}{2} + c.$	$k = rac{\pi}{2}k$ $+rac{\pi}{2}k$
7.	What is the freque is time in seconds?		letermined by <i>y</i> =	$= \sin(500\pi x)$, where x
	a. 500	b. 250	c. $\frac{1}{250}$	d. $\frac{1}{300}\pi$
8.	by the equation v	blood at a value in the = $-3\cos(2\pi t) + 3$, w s. What is the rodent	here v is in centin	neters per second and
	a. 15 bpm	b. 120 bpm	c. 60 bpm	d. 180 bpm
9.	What is the domai	n of $y = \tan(x)$?		
	a. $\{x \mid x \neq k\pi \}$ b. $\{x \mid x \neq \frac{\pi}{2} \}$	5	c. $\{x \mid x \neq d$. $\{x \mid x \neq x \neq d$.	$\frac{\pi}{2}k$ }
10.	2	e graph of $y = A \sin [$		2 2
	b. There is a maxic. There is a minir	t x-intercept at $\frac{\pi}{4} + 2\pi$. mum value at $x = \frac{5\pi}{4}$. num value at $x = -\frac{3\pi}{4}$ cal asymptote of $x = \frac{\pi}{4}$	<u>-</u> .	$= A \csc \left[B(x - C) \right].$
11.	Which of the follo to the right?	wing equations will sh	$\inf y = \cos\left(x\right) two$	o units up and $\frac{\pi}{6}$ units
	a. $y = \cos(2x)$ b. $y = 2\cos(x)$	$\left(+ \frac{\pi}{6} \right)$ $\left(- \frac{\pi}{6} \right)$	c. $y = \cos(x)$ d. $y = 2 + x$	$\frac{\left(\frac{\pi}{6}x+2\right)}{\cos\left(x-\frac{\pi}{6}\right)}$
12.	$\tan\left(\frac{3\pi}{2}\right) =$			
	a1	b. 1	c. 0	d. undefined
13.	If $y = -\frac{2}{3}\cos\left(3x\right)$	$\left(x-\frac{\pi}{2}\right)+1$, then its per-	riod is:	
	a. $\frac{2\pi}{3}$	b. $\frac{\pi}{3}$	c. $\frac{\pi}{6}$	d. $\frac{3\pi}{2}$
14.	If $y = -\frac{2}{3}\cos\left(3x - \frac{\pi}{2}\right) + 1$, then its range is:			
	a. $\left[\frac{1}{3}, \frac{5}{3}\right]$	b. $\left[-\frac{2}{3},\frac{2}{3}\right]$	c. $\left[-\frac{\pi}{6}, \frac{11}{6}\right]$	d. [-1,1]