

## Who Wants to Be a Math Millionaire?

Rules: If any question from #1-5 is answered incorrectly or the student answering it gets help, other than from a life line, then the class starts over at the beginning.

If any question from #6-10 is answered incorrectly or the student answering it gets help, other than from a life line, then the class starts over at question #6.

If any questions #11-15 is answered incorrectly or the student answering it gets help, other than from a life line, then the class starts over at question #11. \*This means you will have to get question #11 correct again to get 1 point extra credit on the test.

If any student says or does anything derogatory or negatively towards another student or host-moderator then that student is eliminated from any extra credit earned or to be earned.

Life Lines Available: *Call a Friend in the Class*      *Poll the groups*      *50-50*

<u># of Questions Correct:</u>	<u>Math Dollar Amount:</u>	<u>What it can "purchase" you in this math class:</u>
Question 1	\$100	self congratulations
Question 2	\$200	head nodding
Question 3	\$300	smiles
Question 4	\$500	high five
Question 5	\$1000	pat on the back
Question 6	\$2000	a thumb up
Question 7	\$4000	two thumbs up
Question 8	\$8000	big applause
Question 9	\$16,000	yeah cheer
Question 10	\$32,000	1 point extra credit on homework for the class
Question 11	\$64,000	1 point extra credit on the test for the class
Question 12	\$125,000	1 point extra credit on homework and 1 point extra credit on the test for the class
Question 13	\$250,000	2 points extra credit on homework and 1 point extra credit on the test for the class
Question 14	\$500,000	2 points extra credit on homework and 2 points extra credit on the test for the class
Question 15	\$1,000,000	3 points extra credit on homework and 2 points extra credit on the test for the class

## Trig Review for Who Wants to Be a Math Millionaire?

Note: No calculator allowed unless specified.

- 1) Find the amplitude of:  $-2 \sin(4x + \pi) - 5$   
a) 2      b) -2      c) 4      d) 5      e) -5      f)  $\frac{\pi}{4}$       g)  $\frac{\pi}{2}$
- 2) Find the period of:  $-2 \sin(4x + \pi) - 5$   
a) 2      b) -2      c) 4      d) 5      e) -5      f)  $\frac{\pi}{4}$       g)  $\frac{\pi}{2}$
- 3) Find the vertical shift of:  $-2 \sin(4x + \pi) - 5$   
a) 2      b) -2      c) 4      d) 5      e) -5      f)  $\frac{\pi}{4}$       g)  $\frac{\pi}{2}$
- 4) Which of the following is sinusoidal?  
a)  $2 \sin(8x + 5\pi) + 3 \cos(8x + \pi)$       c)  $2 \sin(8x + \pi) + 2 \cos(3x + 2\pi)$   
b)  $2 \sin(8x + \pi) + 3 \cos(3x + \pi)$       d)  $2 \sin(8x + \pi) + 3 \sin(3x + 2\pi)$
- 5) The  $\sin 35^\circ$  and the  $\cos x$  have the same answer. What is  $x$ ?  
a)  $35^\circ$       b)  $55^\circ$       c)  $145^\circ$       d)  $0^\circ$
- 6) The  $\sec \frac{\pi}{8}$  and the following have the same answer?  
a)  $\csc \frac{\pi}{8}$       b)  $\csc \frac{\pi}{2}$       c)  $\csc \frac{3\pi}{8}$       d)  $\csc 0$       e)  $\cos \frac{\pi}{8}$       f)  $\cos \frac{\pi}{2}$       g)  $\cos \frac{3\pi}{8}$
- 7) Find the phase shift of:  $-2 \sin(4x + \pi) - 5$   
a)  $\pi$  left      b)  $\pi$  right      c) 4      d) 5 up      e) 5 down      f)  $\frac{\pi}{4}$  left      g)  $\frac{\pi}{4}$  right
- 8) Find the period of:  $-2 \tan(4x + \pi) - 5$   
a) 2      b) -2      c) 4      d) 5      e) -5      f)  $\frac{\pi}{4}$       g)  $\frac{\pi}{2}$
- 9) Find the period of:  $2 \csc(8x + \pi) + 5$   
a) -2      b) 2      c) 8      d) -5      e) 5      f)  $\frac{\pi}{4}$       g)  $\frac{\pi}{8}$
- 10) Find the amplitude of:  $-2 \tan(4x + \pi) - 5$   
a) 2      b) -2      c) 4      d) none      e) -5      f)  $\frac{\pi}{4}$       g)  $\frac{\pi}{2}$
- 11) Find the range of:  $-2 \sin(4x + \pi) + 1$   
a)  $-1 = x = 1$       b)  $-2 = x = 2$       c)  $-1 = x = 2$       d)  $-1 = x = 3$

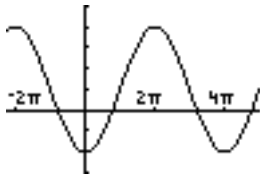
12) Find the range of:  $2 \sec(4x + \pi) - 1$

- a)  $-1 = y$  &  $y = 1$       b)  $-2 = y$  &  $y = 2$       c)  $-3 = y$  &  $y = 1$       d)  $-3 = y$  &  $y = 3$   
 e)  $-1 = y$  &  $y = 1$       f)  $-2 = y$  &  $y = 2$       g)  $-3 = y$  &  $y = 1$       h)  $-3 = y$  &  $y = 3$

13) Find one zero for:  $-3 \cos(x + \frac{\pi}{2})$

- a)  $0$ , or  $\pi$ , or  $2\pi$ , etc      b)  $-\frac{\pi}{2}$ , or  $\frac{\pi}{2}$ , or  $\frac{3\pi}{2}$ , etc      c)  $-3$       d) no zero's

14) The graph of the following is what equation



- a)  $y = -3 \sin(0.5x - \frac{\pi}{2}) + 2$       e)  $y = -3 \sin(0.5x - \pi) + 2$   
 b)  $y = 3 \sin(0.5x - \frac{\pi}{2}) + 1$       f)  $y = -3 \sin(0.5x - \pi) + 1$   
 c)  $y = -3 \sin(0.5x - \frac{\pi}{2})$       g)  $y = -3 \sin(0.5x - \pi)$   
 d)  $y = -3 \sin(0.5x - \frac{\pi}{2}) + 1$       h)  $y = -3 \sin(0.5x - \pi) + 1$

15) Find one asymptote for:  $-2 \sec(2x + \pi) - 3$

- a)  $0$ , or  $\pi$ , or  $2\pi$ , etc      b)  $-\frac{\pi}{2}$ , or  $\frac{\pi}{2}$ , or  $\frac{3\pi}{2}$ , etc      c)  $-\frac{3\pi}{4}$ , or  $-\frac{\pi}{4}$ , or  $\frac{\pi}{4}$ , etc      d) none

16) Find the range of:  $\text{Arcsin } x$

- a)  $0 = \theta < \pi$       b)  $-\frac{\pi}{2} = \theta = \frac{\pi}{2}$       c)  $-1 = \theta = 1$       d)  $0 = \theta < 2\pi$

17) Find the range of:  $\text{Cos}^{-1}x$

- a)  $0 = \theta < \pi$       b)  $-\frac{\pi}{2} = \theta = \frac{\pi}{2}$       c)  $-1 = \theta = 1$       d)  $0 = \theta < 2\pi$

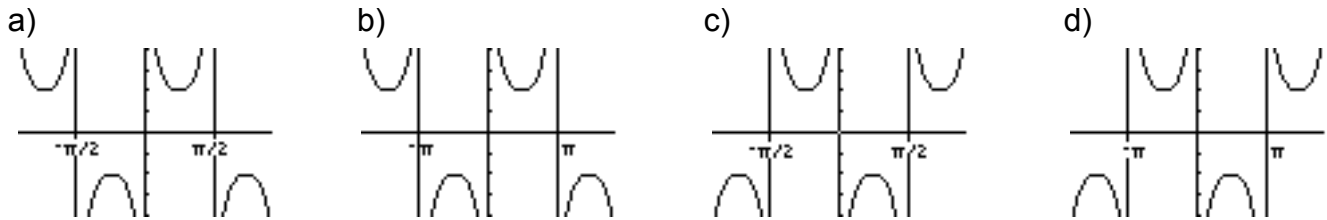
18) Find the range of:  $\text{Arctan } x$

- a)  $0 < \theta < \pi$       b)  $-\frac{\pi}{2} < \theta < \frac{\pi}{2}$       c)  $-1 = \theta = 1$       d)  $0 = \theta < 2\pi$

19) Find the range of:  $\text{Cot}^{-1}x$

- a)  $0 < \theta < \pi$       b)  $-\frac{\pi}{2} < \theta < \frac{\pi}{2}$       c)  $-1 = \theta = 1$       d)  $0 = \theta < 2\pi$

20) Which of the following is the graph of:  $-2 \sec(2x + \frac{\pi}{2})$



21) Find the exact value(s) for:  $\text{Arcsin} \frac{-\sqrt{3}}{2}$

- a)  $\frac{5\pi}{3}$     b)  $\frac{-\pi}{3}$     c)  $\frac{4\pi}{3} + 2k\pi$  &  $\frac{5\pi}{3} + 2k\pi$     d)  $\frac{4\pi}{3}$  &  $\frac{5\pi}{3}$     e)  $\frac{2\pi}{3}$     f)  $\frac{2\pi}{3} + 2k\pi$

22) Find the exact value(s) for:  $\cos^{-1} \frac{-1}{2}$

- a)  $\frac{-\sqrt{3}}{2}$     b)  $\frac{-\pi}{3}$     c)  $\frac{2\pi}{3} + 2k\pi$  &  $\frac{4\pi}{3} + 2k\pi$     d)  $\frac{2\pi}{3}$  &  $\frac{4\pi}{3}$     e)  $\frac{2\pi}{3}$     f)  $\frac{2\pi}{3} + 2k\pi$

23) Rewrite in terms of t:  $\sec(\text{Sin}^{-1} \frac{1}{t})$

- a)  $\frac{t}{\pm\sqrt{t^2-1}}$     b)  $\frac{1}{\pm\sqrt{t^2-1}}$     c)  $\frac{1}{\sqrt{t^2-1}}$     d)  $\frac{\pm\sqrt{t^2-1}}{t}$     e)  $\frac{\sqrt{t^2-1}}{t}$     f)  $\frac{t}{\sqrt{t^2-1}}$

24) Find the exact value to:  $\text{Arccos}(\cos \frac{7\pi}{6})$

- a)  $\frac{\pi}{6}$     b)  $\frac{-\pi}{6}$     c)  $\frac{5\pi}{6}$     d)  $\frac{7\pi}{6}$     e)  $\frac{-\sqrt{3}}{2}$

25) Find the exact value to:  $\text{Arcsin}(\sin \frac{7\pi}{6})$

- a)  $\frac{\pi}{6}$     b)  $\frac{-\pi}{6}$     c)  $\frac{5\pi}{6}$     d)  $\frac{7\pi}{6}$     e)  $\frac{-\sqrt{3}}{2}$

- 26) Find  $\angle B$  for triangle ABC given:  $\angle A = 31^\circ$ ,  $b = 30$ ,  $a = 15$   
(round to the nearest tenth)
- a)  $44.6^\circ$     b)  $135.4^\circ$     c)  $31^\circ$     d) no triangle possible so no  $\angle B$
- 27) Find the missing side(s) for triangle ABC given:  $\angle A = 31^\circ$ ,  $b = 30$  inches,  $a = 22$  inches  
(round to the nearest tenth)
- a) only 41.4 inches  
b) only 15.5 inches  
c) both 41.4 inches & 10.1 inches  
d) both 41.4 inches & 15.5 inches  
e) no triangle possible so no side c
- 28) An airplane starting in Chicago flies at a heading of  $100^\circ$  at 500 mph for 2 hours and lands at a town. Another airplane starting in Chicago flies at a heading of  $270^\circ$  at 400 mph for 3 hours and lands in a different town. Find the distance between the the two towns.  
(round to the nearest mile)
- a) 1903 miles            b) 2191 miles            c) 1422 miles            d) 1538 miles
- 29) Find the area of a segment of a circle that is bounded by a central angle with a measure of 2.5 radians and the circle has a radius of 10 inches. (round to the nearest square inch)
- a) 30 inches squared  
b) 95 inches squared  
c) 125 inches squared  
d) 155 inches squared