

RED DO NOT WRITE ON THE EXAM

Math 111 - Section 1 (J. Tay)

Test 2 May 10 - May 12, 2012

- The measure of an angle in degrees is $\frac{7\pi}{12}$ radians. Find the measure of the angle in degrees.
A. 52.5° B. 105° C. 30° D. 210° E. 15°
- Find the radius of a circle that has a sector of area 10 cm^2 determined by a central angle of $1/5$ radians.
A. 100 cm B. 50 cm C. 5 cm D. 10 cm E. $5\sqrt{2}$ cm
- Find the exact value of the expression $5 \csc \frac{\pi}{6} - 2 \cos \frac{2\pi}{3}$
A. 11 B. $\frac{10\sqrt{3}-3}{3}$ C. 9 D. $\frac{10\sqrt{3}+3}{3}$ E. $\frac{13\sqrt{3}}{3}$
- Find the exact value of $\tan \frac{34\pi}{3}$.
A. $-\sqrt{3}$ B. $-\frac{\sqrt{3}}{3}$ C. $\sqrt{3}$ D. -1 E. $\frac{\sqrt{3}}{3}$
- The point $(-12,5)$ is on the terminal side of an angle θ in standard position. Find the exact value of $\cos \theta$.
A. $-\frac{1}{12}$ B. $\frac{5}{12}$ C. $-\frac{5}{12}$ D. $-\frac{13}{12}$ E. $-\frac{12}{13}$ F. $-\frac{12}{5}$
- Which of the following is not in the range of $\cos \theta$, $0 \leq \theta \leq 2\pi$?
A. $\frac{\sqrt{2}}{2}$ B. 1 C. $\frac{\pi}{6}$ D. 0 E. -0.85 F. π
- What is the domain of the secant function?
A. All real numbers except odd multiples of $\frac{\pi}{2}$ (90°)
B. All real numbers
C. All real numbers except integral multiples of $\frac{\pi}{2}$ (90°)
D. All real numbers except integral multiples of π (180°)
E. None of these

8. Use properties of trigonometric functions to find the exact value of the expression

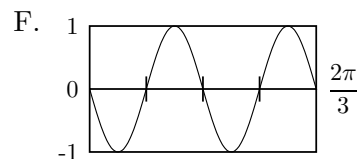
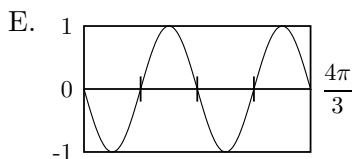
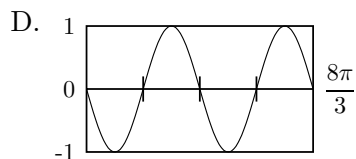
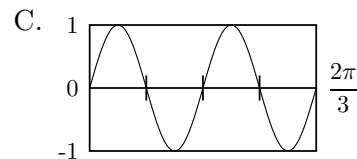
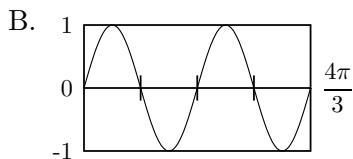
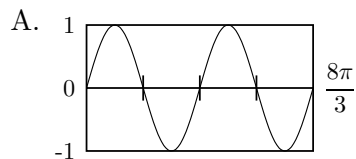
$$\tan\left(\frac{\pi}{7}\right) \cot\left(-\frac{8\pi}{7}\right).$$

- A. 0 B. -1 C. Undefined D. 1 E. $\frac{1}{8}$

9. Which of the following is not equal to $\tan(-33^\circ)$.

- A. $-\tan(33^\circ)$ B. $-\frac{1}{\cot(33^\circ)}$ C. $\frac{\sin(33^\circ)}{\cos(33^\circ)}$
 D. $\frac{\sin(-33^\circ)}{\cos(-33^\circ)}$ E. $-\frac{\sin(33^\circ)}{\cos(33^\circ)}$ F. $\frac{1}{\cot(-33^\circ)}$

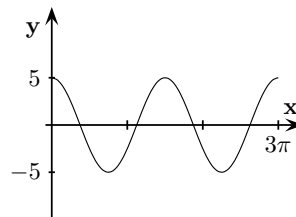
10. Match the function $y = \sin\left(\frac{3}{2}x\right)$ to the correct graph.



11. The sine function $f(x) = -4\sin(3\pi x)$ has amplitude 4. What is its period?

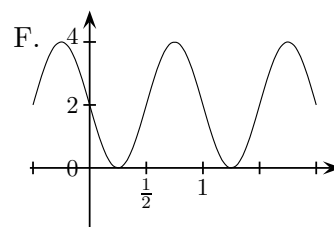
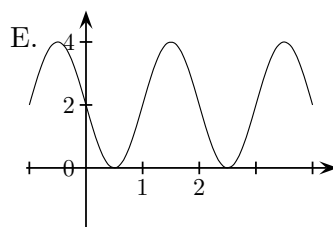
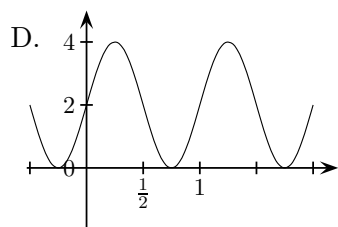
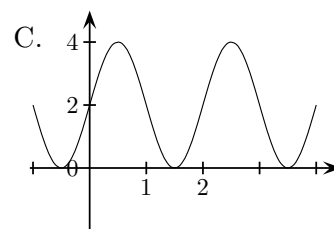
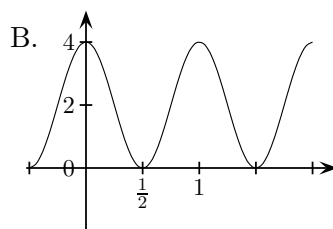
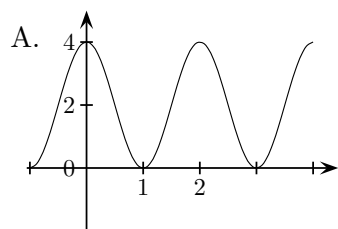
- A. $\frac{1}{3}$ B. $-\frac{3\pi}{4}$ C. $\frac{2}{3}$ D. $\frac{3\pi}{4}$ E. $-\frac{2}{3}$

12. Write an equation for the displayed graph.



- A. $y = -5\cos\left(\frac{4}{3}x\right)$ B. $y = -5\cos\left(\frac{2}{3}x\right)$ C. $y = 5\cos\left(\frac{4\pi}{3}x\right)$
 D. $y = 5\cos\left(\frac{2\pi}{3}x\right)$ E. $y = 5\cos\left(\frac{4}{3}x\right)$

13. Match the function $y = -2\sin(2\pi x) + 2$ to the correct graph.



14. Write an equation for the displayed graph.

A. $y = \cot\left(\frac{1}{2}x\right)$

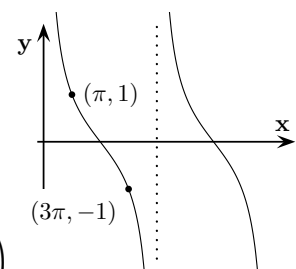
B. $y = \cot\left(\frac{1}{4}x\right)$

C. $y = \cot\left(\frac{1}{3}x\right)$

D. $y = \cot(x)$

E. $y = -\cot\left(\frac{1}{2}x\right)$

F. $y = -\cot\left(\frac{1}{3}x\right)$



15. Write an equation for the displayed graph.

A. $y = 3\csc\frac{x}{2}$

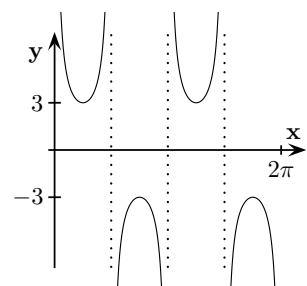
B. $y = 3\csc x$

C. $y = 3\csc(2x)$

D. $y = 3\sec\frac{x}{2}$

E. $y = 3\sec x$

F. $y = 3\sec(2x)$



16. Find the phase shift of the function $f(x) = -4\cos\left(-2x + \frac{7}{8}\right)$.

A. $-\frac{7}{16}$

B. $-\frac{7}{8}$

C. $-\frac{7}{4}$

D. $\frac{7}{16}$

E. $\frac{7}{8}$

F. $\frac{7}{4}$

17. Calculate the exact value of $2\cos^2\left(\frac{1}{2}\right) + 2\sin^2\left(\frac{1}{2}\right)$.

A. $\frac{2\sqrt{3}+4}{2}$

B. $\frac{1}{4}$

C. $\frac{1}{2}$

D. 1

E. 2

F. 4

18. If $\cos \theta = -\frac{2}{\sqrt{53}}$ and $\sin \theta = -\frac{7}{\sqrt{53}}$, find the value of $\tan \theta$.

- A. $\frac{7}{2}$ B. $-\frac{7\sqrt{53}}{106}$ C. $-\frac{1}{2}$
- D. -1 E. $\frac{2}{7}$ F. Undefined

19. If $\sec \theta = -\frac{2\sqrt{3}}{3}$ and $90^\circ < \theta < 180^\circ$, find the value of $\sin \theta$.

- A. $\frac{\sqrt{3}}{2}$ B. $-\frac{\sqrt{3}}{2}$ C. $\frac{1}{2}$
- D. $-\frac{1}{2}$ E. $\frac{\sqrt{2}}{2}$ F. $-\frac{\sqrt{2}}{2}$

20. The average weather of Provo, Utah, USA (*Source: www.meoweather.com*) is given in a table on the right. Which of the following is the closest approximation of the amplitude of the sinusoidal function that best fits this data?

- A. 30 B. 24.75 C. 54.75
- D. 109.5 E. 49.5 F. 79.5

Month	Temp (°F)
Jan	30
Feb	34
Mar	44
Apr	51
May	60.5
Jun	70
Jul	79.5
Aug	77.5
Sep	66.5
Oct	53.5
Nov	40
Dec	30.5

1. B
2. D
3. A
4. C
5. E
6. F
7. A
8. B
9. C
10. A
11. C
12. E
13. F
14. B
15. C
16. D
17. E
18. A
19. C
20. B