

PRECALCULUS EXAM #1

NAME _____

BANNER _____

Note Title

6/9/2006

★ Follow these instructions or receive a zero.

Use a #2 pencil for the following:

1. Write your name on your parscore.
2. Fill in your banner ID, leaving out the @ symbol. Start from the left and go to the right. Be sure to fill in the corresponding bubbles.
3. This is Test Form A. Fill in this bubble under "Exam Form" on your parscore.
4. Make sure you've written your name and banner on this exam at the top of this page.
5. As you take the exam, circle your answers on this test as well as fill in the corresponding bubbles on your parscore.
6. Feel free to write on this exam and to use the scratch paper attached.
7. **There can be more than one answer.**
This means you can fill in more than one bubble if necessary.
8. Don't cheat. Read these instructions again to make sure you know what you're doing. Work the easy problems first. Cover your work!

#1 Which of the following are true?

- a) $\sin(47\pi) = \sin(113\pi)$ b) $\sin(\theta - 47\pi) = \sin(\theta - 113\pi)$
c) $\sin(-\frac{24}{17}) = -\sin(\frac{24}{17})$ d) $\cos(\theta + \pi) = \cos(\theta - \pi)$
e) None of the above

#2 Which of the following are true?

- a) $\sin(-\theta) = -\sin(\theta)$ b) $\cos(-\theta) = \cos(\theta)$
c) $-\cos(\theta) = \cos(\theta)$ d) $\cos(\theta)$ is an odd function
e) None of the above

#3 Which of the following are true?

- a) $\sin \theta$ is 2π periodic b) $\cos \theta$ has a period of 180°
c) $\tan \theta$ is 2π periodic d) $\cot \theta$ has a period of 180°
e) None of the above

#4 Which of the following are examples of a "smart one"?

- a) $\frac{180^\circ}{\pi \text{ rad}}$ b) $\frac{2\pi \text{ rad}}{360^\circ}$ c) $\sin^2 \theta + \cos^2 \theta$ d) $\frac{\sqrt{2}}{\sqrt{2}}$ e) None of the above

#5 Which of the following are true?

- a) $s = r\theta$ where θ is in degrees b) $\sin^2 \theta + \cos^2 \theta = 1$ for any θ
c) $\tan^2 \theta = \sec^2 \theta + 1$ d) I drop 2 midterm exam grades
e) None of the above

#6 Which of the following are true?

- a) If the radius of a spinning bicycle tire is 10 cm then the tire's circumference is 20π cm.
b) The area of a sector of a circle is $\frac{1}{2}r^2\theta$
c) $\sin \theta = \frac{y}{r} = \frac{1}{\sec \theta}$ d) $\sin \theta = \frac{y}{r} = \frac{1}{\csc \theta}$ e) None of the above

#7 If the radius of a ferris wheel is 35 meters and one ride lasts 10 minutes, how fast does the ferris wheel have to spin for a rider to go 700π meters?

- a) $70\pi \frac{\text{meters}}{\text{min}}$ b) $1 \frac{\text{rev}}{\text{min}}$ c) $70 \frac{\text{meters}}{\text{min}}$ d) $\frac{1}{2} \frac{\text{rev}}{\text{min}}$
e) None of the above

#8 Which of the following are true?

- a) $v = r\omega$ b) $v = s/t$ c) $\omega = \theta/t$ d) $\omega = \frac{v}{r}$ e) None of the above

#9 Which of the following are true?

- a) $\pi^\circ = 180$ radians b) $2\pi \text{ rad} = 360^\circ$ c) $60^\circ 6' = 60.1^\circ$
d) $\pi \approx 3.1415\dots$ degrees e) None of the above

#10 If $\sin \theta = \frac{\sqrt{3}}{2}$ and $\cos \theta < 0$ then which of the following are true?
 a) $\cos \theta = -\frac{1}{2}$ b) $\cos(\theta - 60^\circ) = -\cos \theta$
 c) $\tan \theta = \frac{\cos \theta}{\sin \theta}$ d) θ could be 120° e) None of the above

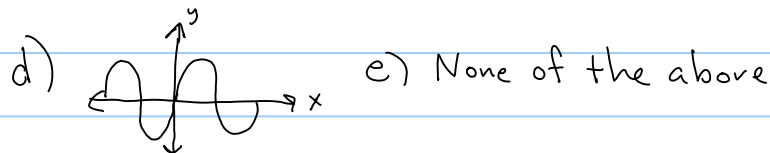
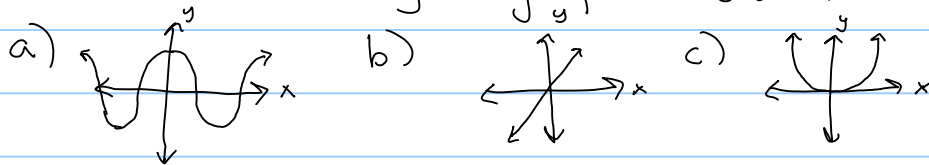
#11 $\sin(160^\circ)$ is equivalent to
 a) $\sin(20^\circ)$ b) $\cos(70^\circ)$ c) $-\cos(250^\circ)$
 d) $\sin(340^\circ)$ e) None of the above

#12 Which of the following are true?
 a) $\sin(\pi/4) = \frac{\sqrt{2}}{2}$ b) $\sin(\frac{3\pi}{4}) = -\frac{\sqrt{2}}{2}$ c) $\sin(\frac{\pi}{4}) = \frac{1}{\sqrt{2}}$
 d) $\sin(\frac{3\pi}{4}) = \cos(\frac{3\pi}{4})$ e) None of the above

#13 Which of the following are true?
 a) $\cos(\frac{8\pi}{3}) = \cos(\frac{14\pi}{3})$ b) $\sin(\frac{76\pi}{3}) = \sin(\frac{40\pi}{3})$
 c) $\tan(\frac{32\pi}{7}) = \tan(\frac{39\pi}{7})$ d) $\sec(\frac{13\pi}{4}) = \sec(\frac{21\pi}{4})$
 e) None of the above

#14 Which of the following are true?
 a) $t \in \mathbb{R}$ means t is a real number
 b) $\frac{\frac{a}{b}}{\frac{c}{d}} = \frac{a}{b} \cdot \frac{d}{c}$ c) $\sqrt[6]{|9z|} = \sqrt[6]{2^6 \cdot 3^1} = \sqrt[6]{2^6} \cdot \sqrt[6]{3^1} = 2 \cdot \sqrt[6]{3}$
 d) A man was once murdered for proving $\sqrt{2}$ is irrational
 e) None of the above

#15 Which of the following are graphs of even functions?



#16 * Extra Credit: What is $1+2+3+\dots+98+99+100$?

a) $100 \cdot (50)/2$ b) 5050 c) 1055 d) 7505
 e) None of the above

Hint: Carl Gauss is famous for instantly answering the question at age 7. Try turning the addition into multiplication.