

## PRECAL EXAM #2

Name: \_\_\_\_\_

Banner: \_\_\_\_\_

Note Title

3/25/2006

- #1 Find all solutions of  $2 \sin(3\theta) = \sqrt{3}$
- a)  $\frac{\pi}{3} + 2n\pi, \frac{2\pi}{3} + 2n\pi; n \in \mathbb{Z}$     b)  $\frac{\pi}{9} + 2n\pi, \frac{2\pi}{9} + 2n\pi; n \in \mathbb{Z}$
- c)  $\frac{\pi}{9} + \frac{2}{3}n\pi, \frac{2\pi}{9} + \frac{2}{3}n\pi; n \in \mathbb{Z}$     d)  $\frac{\pi}{9} + \frac{2}{3}n\pi; n \in \mathbb{Z}$
- e) None of the above

- #2  $\sin[\sin^{-1}(0.34)] =$
- a)  $\cos[\cos^{-1}(0.34)]$     b)  $\arccos[\cos(0.34)]$
- c)  $\tan[\tan^{-1}(0.34)]$     d) All of the above
- e) None of the above

- #3 Which of the following is NOT true?
- a)  $\sec\theta + \tan\theta = \frac{\cos\theta}{1 + \sin\theta}$     b)  $\frac{\sin\theta}{\sin\theta - \cos\theta} = \frac{1}{1 - \cot\theta}$
- c)  $\frac{1 + \tan\theta}{1 - \tan\theta} = \frac{\cot\theta + 1}{\cot\theta - 1}$     d) All of the above
- e) None of the above

- #4 If  $\alpha = 150^\circ$  and  $\beta = 210^\circ$ , which of the following is true?
- a)  $\sin(2\alpha) = 2 \sin\alpha \cos\alpha$     b)  $\cos(\alpha - \beta) = \frac{1}{2}$
- c)  $\sin\left(\frac{\pi}{2} - \beta\right) = \cos\beta$     d) All of the above
- e) None of the above

- #5 Find the exact value of  $\tan(15^\circ)$
- a)  $\frac{\sqrt{6} + \sqrt{2}}{\sqrt{6} - \sqrt{2}}$     b)  $\frac{\sqrt{6} - \sqrt{2}}{\sqrt{6} + \sqrt{2}}$     c)  $\sqrt{\frac{2 + \sqrt{3}}{2 - \sqrt{3}}}$     d)  $\frac{2 + \sqrt{3}}{2 - \sqrt{3}}$
- e) None of the above

#6  $\cos(115^\circ)\cos(85^\circ) + \sin(115^\circ)\sin(85^\circ) =$

a)  $\sin(50^\circ)\cos(10^\circ) + \cos(50^\circ)\sin(10^\circ)$

b)  $\sin(105^\circ)\cos(15^\circ) + \cos(105^\circ)\sin(15^\circ)$

c)  $\cos(35^\circ)\sin(155^\circ) - \sin(35^\circ)\cos(155^\circ)$

d) All of the above    e) None of the above

#7 Find all solutions of  $3\cos\theta + 3 = 2\sin^2\theta$

a)  $\frac{n\pi}{3}; n \in \mathbb{Z}$     b)  $\frac{n\pi}{4}, \frac{n\pi}{2}; n \in \mathbb{Z}$

c)  $\frac{2\pi}{3} + 2n\pi, \frac{4\pi}{3} + 2n\pi, \pi + 2n\pi; n \in \mathbb{Z}$

d)  $\frac{n\pi}{3}, \frac{n\pi}{4}; n \in \mathbb{Z}$     e) None of the above

#8 Find the exact value of  $\sin[\cos^{-1}(\frac{1}{2}) + \sin^{-1}(\frac{1}{2})]$

a) 0    b)  $\frac{\pi}{2}$     c)  $\frac{\pi}{3}$     d)  $\frac{\pi}{6}$     e) None of the above

#9 Find the exact value of  $\cos(\sin^{-1}(\frac{\sqrt{3}}{2}))$

a) undefined    b)  $\frac{3}{2}$     c)  $\frac{\pi}{2}$     d)  $\frac{\sqrt{3}}{2}$     e) None of the above

#10 Find the exact value of  $\sin(105^\circ)$

a)  $\frac{\sqrt{2+\sqrt{3}}}{2}$     b) 0    c)  $\frac{\sqrt{6}+\sqrt{2}}{4}$     d) a and c    e) None of the above

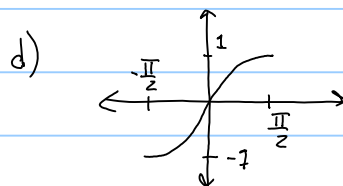
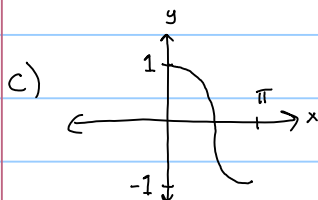
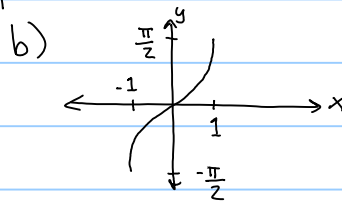
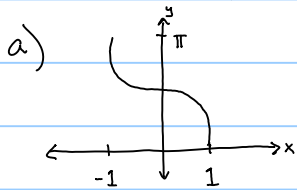
#11 The expression  $K - \frac{1}{\sec^2 x} = \sin^2 x$  is an identity when  $K$  is equal to

a) 0    b) 1    c)  $\cos^2 x$     d)  $\sin^2 x$     e) None of the above

#12 Find the exact value of  $\sin(\tan^{-1}(\frac{1}{4}))$

a)  $\sqrt{17}$     b)  $-\sqrt{17}$     c)  $\frac{1}{\sqrt{17}}$     d)  $\frac{-1}{\sqrt{17}}$     e) None of the above

#13 Which of the following is a graph of  $\arccos(x)$ ?



e) None of the above

#14 If  $\sin \alpha = \frac{3}{4}$  and  $\cos \beta = \frac{4}{5}$  where  $0 < \alpha < \frac{\pi}{2}$  and  $-\frac{\pi}{2} < \beta < 0$  find the exact value of  $\sin(\alpha + \beta)$

a)  $14\sqrt{31} - 2$  b)  $\sqrt{71}$  c)  $\frac{3}{5} - \frac{3\sqrt{71}}{20}$  d)  $\frac{\sqrt{71} - 12}{10}$

e) None of the above

#15 Express  $\cos(6\theta)\cos(3\theta)$  as a sum without products

a)  $\frac{1}{2} [\cos(3\theta) + \cos(9\theta)]$  b)  $\frac{1}{2} [\cos(9\theta) - \cos(3\theta)]$

c)  $\frac{1}{2} [\cos(3\theta) - \cos(9\theta)]$  d)  $\frac{1}{2} [\sin(9\theta) - \sin(3\theta)]$

e) None of the above

#16 Find all solutions of  $\sin \theta + \cos \theta = 1$

a)  $2n\pi, \frac{\pi}{2} + 2n\pi; n \in \mathbb{Z}$  b)  $n\pi, \frac{\pi}{2} + n\pi; n \in \mathbb{Z}$

c)  $\frac{\pi}{2} + 2n\pi; n \in \mathbb{Z}$  d)  $2n\pi; n \in \mathbb{Z}$  e) None of the above

#17 Find the exact value of  $\cos(165^\circ)$

a)  $\frac{\sqrt{6} - \sqrt{2}}{4}$  b)  $\frac{\sqrt{6} + \sqrt{2}}{4}$  c)  $-\left(\frac{\sqrt{6} + \sqrt{2}}{4}\right)$  d)  $-\left(\frac{\sqrt{6} - \sqrt{2}}{4}\right)$

e) None of the above

#18 Simplify  $\frac{\sec^2\theta - 1}{\sec^2\theta}$

- a)  $\sin^2\theta$  b)  $\csc\theta$  c)  $2\sin^2\theta$  d)  $\frac{\tan^2\theta}{\cos^2\theta}$   
e) None of the above

#19 Which of the following is NOT true?

- a)  $\tan[\tan^{-1}(-3.9)] = -3.9$  b)  $\sin^{-1}(-1) = -\frac{\pi}{2}$   
c)  $\sin[\tan^{-1}(-1)] = -\frac{\sqrt{2}}{2}$  d)  $\cos^{-1}[\cos(-\frac{\pi}{6})] = -\frac{\pi}{6}$   
e) None of the above

#20 Find all solutions of  $\sin(2\theta) = \sqrt{2}\cos\theta$

- a)  $\frac{\pi}{2} + 2n\pi; n \in \mathbb{Z}$  b)  $\frac{\pi}{4} + 2n\pi, \frac{3\pi}{4} + 2n\pi; n \in \mathbb{Z}$   
c)  $\frac{\pi}{2} + 2n\pi, \frac{\pi}{4} + 2n\pi, \frac{3\pi}{4} + 2n\pi; n \in \mathbb{Z}$   
d)  $\frac{\pi}{4}, \frac{\pi}{2}, \frac{3\pi}{4}, \frac{3\pi}{2}$  e) None of the above

#21 Make sure you have (leave out the @)

- a) entered your name and banner on your papscore and exam  
b) circled all your answers on your exam  
c) entered your class number (1093.00X) on your papscore and exam  
d) filled in bubble B on your papscore under the "Exam Form" section.  
e) If you have not completed all of the above, you will receive a zero score on this exam.