

PRECAL EXAM #3

NAME: _____ BANNER _____ 1093. _____

Note Title **READ AND FOLLOW THE INSTRUCTIONS** 4/21/2006

Please circle your answers on this test and fill in the corresponding bubble on your Parscore with #2 pencil. Bubble in A in the exam form section of your parscore and write your name, banner, and section # in the correct field on your parscore. In the exam number field, bubble in 003. When filling in your banner on the parscore, drop the @ at the beginning of your banner. Do not replace it with a zero. Fill in your banner from left to right. If you cannot follow these instructions, then don't bother taking this exam because you will receive a zero.

#1 Which of the following is true for a right triangle?

- a) $\sin \theta = \frac{\text{hyp}}{\text{opp}}$, $\cos \theta = \frac{\text{opp}}{\text{adj}}$, $\tan \theta = \frac{\text{hyp}}{\text{opp}}$
 b) $\sec \theta = \frac{\text{opp}}{\text{adj}}$, $\csc \theta = \frac{\text{adj}}{\text{hyp}}$, $\cot \theta = \frac{\text{hyp}}{\text{adj}}$
 c) $\tan \theta = \frac{\text{opp}}{\text{adj}}$, $\cot \theta = \frac{\text{adj}}{\text{opp}}$, $\cos \theta = \frac{\text{adj}}{\text{hyp}}$
 d) All of the above e) None of the above

#2 Which of the following is an example of the statement, "Co functions of complimentary angles are equal"?

- a) $\sin(\pi) = \cos(\frac{5\pi}{2})$ b) $\tan(\theta) = \frac{1}{\cot \theta}$
 c) $\sec(72^\circ) = \csc(18^\circ)$
 d) All of the above e) None of the above

#3 Which of the following type(s) of triangles is the "ambiguous" case?

- a) SSS b) SAS c) SSA
 d) All of the above e) None of the above

#4 Given the following data for a triangle: $a=2$, $\gamma=50^\circ$, $c=1$
 How many triangles fit this data?

- a) 1 b) 2 c) 3 d) 4 e) None of the above

#5 Which of the following is true?

- a) $b^2 = a^2 + c^2 - 2ac \cos \beta$
 b) $\frac{\sin \alpha}{a} = \frac{b}{\sin \beta}$
 c) $\frac{\sin^2 \alpha}{a} = \frac{\sin^2 \beta}{b} = \frac{\sin^2 \gamma}{c}$

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

#6 Which of the following is true?

a) $A = \frac{1}{2} ab \sin \gamma$ b) $A = \frac{1}{2} bc \sin \alpha$

c) $A = \sqrt{s(s-a)(s-b)(s-c)}$ where $s = \frac{1}{2}(a+b+c)$

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

#7 What is the frequency of the oscillator defined by $d = 10 \sin(5t)$?

a) $5/2\pi$ b) $2\pi/5$ c) 10 d) 2 e) None of the above

#8 If $z = 1+i$, what is z^{12} ?

a) 2^6 b) 2^{12} c) -2^6 d) $12(1+i)$

e) None of the above

#9 If $z = 1+i$ which of the following are roots of z^{16} ?

a) $z^{1/8} [\cos(25\pi/16) + i \sin(25\pi/16)]$

b) $z^{1/8} [\cos(\pi/16) + i \sin(\pi/16)]$

c) $z^{1/8} [\cos(9\pi/16) + i \sin(9\pi/16)]$

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

#10 Which of the following is true?

a) If $z_1 = r_1(\cos \theta_1 + i \sin \theta_1)$ and $z_2 = r_2(\cos \theta_2 + i \sin \theta_2)$ then

$$z_1 z_2 = r_1 r_2 [\cos(\theta_1 + \theta_2) + i \sin(\theta_1 + \theta_2)]$$

b) $z_1 \bar{z}_1 = r_1^2$

c) $z_2^n = r_2^n [\cos(n\theta_2) + i \sin(n\theta_2)]$

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

#11 Given $3^{2x} + 3^{x+1} - 4 = 0$, solve for x .

- a) $x = 3$ b) $x = 0$ c) $x = -4$
d) All of the above e) None of the above

#12 Given $\log_4(x^2 - 9) - \log_4(x + 3) = 3$, Solve for x .

- a) $x = 4^3 + 3$ b) $x = 3^3$ c) $x = 3^4 - 4$
d) All of the above e) None of the above

#13 Given $\log_9(x) + 3 \log_3(x) = 14$, Solve for x .

Hint: Change $\log_9(x)$ to base 3.

- a) $x = 9^{14}$ b) $x = 1$ c) $x = 3^4$
d) All of the above e) None of the above

#14 Given $(\sqrt[3]{27})^{2-x} = 2^{x^2}$, Solve for x .

- a) $x = \pm 2^{1/3}$ b) $x = -1, 2/3$ c) 1
d) All of the above e) None of the above

#15 If you had \$100 and put it in the bank and collected 5% interest, compounded continuously for 100 years, how much money would you have?

- a) \$50,000 b) \$5,000 c) \$14,841.30
d) All of the above e) None of the above

#16 Which of the following is NOT true?

- a) $A = P \left(1 + \frac{r}{n}\right)^{nt}$ when compounding interest n times a year
b) $P = A e^{-rt}$ when compounding interest continuously
c) $I = Prt$ is the interest charged
d) All of the above e) None of the above

#17 Imagine that when you were 5 years old, you happened to inherit a signed, collector's edition pair of Power Ranger's Ultra underwear from your long lost uncle Jimbo, valued at \$100,000, and those underwear were your favorite underwear. In fact, you wore them every day until you were 30 years old and, because the picture of the Blue Ranger was on the back side of the underwear, you wore them backwards so you could see the picture when wearing them. If these underwear lost their value by 7% every day you wore them, how much would they be worth after 25 years of wear? (Assume 365 days per year, and one wearing per day)

a) \$17,380.30 b) \$26,589.42

c) My imagination is not that good.

d) I only wear Spiderman underwear.

e) Who needs underwear?

#18 Convert $-2 + 2\sqrt{3}i$ to polar form.

a) $4 [\cos(\frac{2\pi}{3}) + i \sin(\frac{2\pi}{3})]$ b) $\sqrt{13} [\cos(\frac{\pi}{3}) + i \sin(\frac{\pi}{3})]$

c) $2\sqrt{10} [\sin(\frac{2\pi}{3}) + i \cos(\frac{2\pi}{3})]$

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

#19 Given $x^4 = 64$, solve for x

a) $x = \pm 4$ b) $x = \pm 4i$ c) $x = \pm 4, \pm 4i$

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

#20 Given a polynomial with real coefficients

a) Solutions will come in conjugate pairs

b) Solutions may not have the same radius

c) If it is of order 4, it will have 4 solutions

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