

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

Write your name and Banner here and here.

### Instructions for Students using ParSCORE Test Forms

Required Materials (available at campus bookstore):

- ParSCORE Test Form – No. X-101864
- #2 Pencil

**Use a #2 Pencil**  
 Note: Marks made with mechanical, recycled, green, and earth friendly pencils as well as pens **will be marked wrong** by the scanner.

Fill in the entire rectangle to mark your answer. Example answers 1 and 6 will be graded as correct.

Your ID number is the **LAST 8 digits of your BANNER ID**. Drop the first zero on your Banner ID. Example: Student's Banner ID reads "012345678". The ID Number entered on the ParSCORE Test Form is "12345678". Do not use social security or driver's license number.

Do not fill in the Exam Number

PRINT your **Name, Course, and Section Number** clearly.

**Do Not** mark answers with single line, forget to erase errors completely or forget to fill in answers. Example answers 2-5 will be graded as incorrect.

This is FORM D

Do not fill in the Exam Number

MWF	10:00 AM	→	1093.002
TTH	8:00 AM	→	1093.005
TTH	2:00 PM	→	1093.008

Separate the pages of the exam and use the back of the paper as scratch paper. I'll have a stapler to staple your exam back together. Grades will be available in WebCT as soon as possible.

Cover your work and your Parscore. Don't talk or look around the room like an idiot. If something is illegible then please notify me. If a question is ambiguous then please ask me to clarify.

DON'T GIVE UP! Do your best on every problem. You are not supposed to already know the answer, you are to figure it out using what you know. Use all of your available time. If you finish early, redo the problems to verify correctness. Don't "check your work"; redo it separately without looking at your previous work.

1) Solve the triangle given  $a=1$ ,  $b=2$ , and  $c=3$

A)  $\alpha = 32^\circ$ ,  $\beta = 64^\circ$ ,  $\gamma = 84^\circ$     B)  $\alpha = 16^\circ$ ,  $\beta = 32^\circ$ ,  $\gamma = 132^\circ$

C)  $\alpha = 32^\circ$ ,  $\beta = 16^\circ$ ,  $\gamma = 132^\circ$     D)  $\alpha = 26^\circ$ ,  $\beta = 39^\circ$ ,  $\gamma = 115^\circ$

E) None of the above

2) Solve for  $z$ :  $z^4 - 1 - i = 0$

A)  $z_k = z^{1/8} \left[ \cos\left(\frac{\pi}{16} + \frac{\pi k}{2}\right) + i \sin\left(\frac{\pi}{16} + \frac{\pi k}{2}\right) \right]$   $k=0, \dots, 3$

B)  $z_k = z^{1/8} \left[ \cos\left(\frac{\pi}{4} + \frac{\pi k}{2}\right) + i \sin\left(\frac{\pi}{4} + \frac{\pi k}{2}\right) \right]$   $k=0, \dots, 3$

C)  $z_k = z^{1/4} \left[ \cos\left(\frac{\pi}{16} + \frac{\pi k}{4}\right) + i \sin\left(\frac{\pi}{16} + \frac{\pi k}{4}\right) \right]$   $k=1, \dots, 4$

D)  $z_k = z^{1/4} \left[ \cos\left(\frac{\pi}{4} + \frac{\pi k}{4}\right) + i \sin\left(\frac{\pi}{4} + \frac{\pi k}{4}\right) \right]$   $k=0, \dots, 3$

E) None of the above

3) Find the area of the triangle with  $a=4$ ,  $b=3$ , and  $c=5$

A) 12    B) 6    C)  $6\sqrt{2}$     D)  $12\sqrt{3}$     E) None of the above

4) Solve for  $z$ :  $z^2 + 2z = -2$

A)  $z = -1 \pm 2i$     B)  $z = -1 + i, -1 + 2i$     C)  $z = \pm 2i$

D)  $z = -1 \pm i$     E) None of the above

5) Find  $(1+i)^8 (1+\sqrt{3}i)^3 (2-2i)^4 (\sqrt{3}-3i)^3 (3-3i)^4$

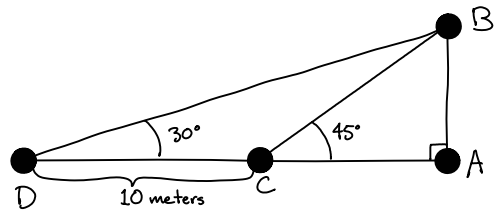
A)  $2^{15} 3^9 \left[ \cos\left(\frac{\pi}{3}\right) + i \sin\left(\frac{\pi}{3}\right) \right]$     B)  $2^{11} 3^6 \left[ \cos\left(\frac{2\pi}{3}\right) + i \sin\left(\frac{2\pi}{3}\right) \right]$

C)  $2^{17} 3^7$     D)  $2^7 3^{11}$     E) None of the above

6) Find  $\sin(41^\circ) - \cos(49^\circ)$

- A)  $2\cos(49^\circ)$     B) 0    C)  $\frac{\sqrt{2}}{2}$     D) 1    E) None of the above

7) Find the length of segment  $\overline{AB}$   
given  $\overline{CD} = 10$  meters.



- A)  $\overline{AB} = 10 - \sqrt{3}$  meters    B)  $\overline{AB} = 4\sqrt{3}$  meters    C)  $\overline{AB} = \frac{10}{\sqrt{3}-1}$  meters  
D)  $\overline{AB} = \frac{5}{\sqrt{3}+1}$  meters    E) None of the above

8) Which of the following choices of components of a triangle will fit 2 different triangles?

- A)  $a=2, b=3, \alpha=45^\circ$     B)  $a=3, b=2, \alpha=45^\circ$   
C)  $a=2, b=3, \alpha=30^\circ$     D) All of the above  
E) None of the above

Hint: Use basic arithmetic to approximate and put upper and lower bounds on  $\beta_1$  and  $\beta_2$  when necessary.

9) Find  $\frac{(-1+i)^6}{(-1-i)^5}$

- A)  $1+i$     B)  $1-i$     C)  $-1-i$     D)  $-1+i$     E) None of the above

10) Solve for  $z$ :  $z^8 - 1 = 0$

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A)  $z = 1, \frac{\sqrt{2}}{2} + \frac{\sqrt{2}}{2}i, i, -\frac{\sqrt{2}}{2} + \frac{\sqrt{2}}{2}i, -1, -\frac{\sqrt{2}}{2} - \frac{\sqrt{2}}{2}i, -i, \frac{\sqrt{2}}{2} - \frac{\sqrt{2}}{2}i$

B)  $z = 1, \frac{\sqrt{3}}{2} + \frac{\sqrt{2}}{2}i, i, -\frac{\sqrt{3}}{2} + \frac{\sqrt{2}}{2}i, -1, -\frac{\sqrt{3}}{2} - \frac{\sqrt{2}}{2}i, -i, \frac{\sqrt{3}}{2} - \frac{\sqrt{2}}{2}i$

C)  $z = 1, \frac{\sqrt{3}}{2} + \frac{1}{2}i, i, -\frac{\sqrt{3}}{2} + \frac{1}{2}i, -1, -\frac{\sqrt{3}}{2} - \frac{1}{2}i, -i, \frac{\sqrt{3}}{2} - \frac{1}{2}i$

D)  $z = 1, \frac{1}{2} + \frac{\sqrt{3}}{2}i, i, -\frac{1}{2} + \frac{\sqrt{3}}{2}i, -1, -\frac{1}{2} - \frac{\sqrt{3}}{2}i, -i, \frac{1}{2} - \frac{\sqrt{3}}{2}i$

E) None of the above