

MATH 161 & 161E – FIRST EXAM – FALL 2002
SEPTEMBER 17, 2002

STUDENT NAME:

STUDENT ID:

RECITATION INSTRUCTOR :

INSTRUCTIONS:

1. This test booklet has 6 pages including this page.
 2. Fill in your name, your student ID number, and your recitation instructor's name above.
 3. Use a number 2 pencil on the mark-sense sheet (answer sheet).
 4. On the mark-sense sheet, fill in the recitation instructor's name and the course number.
 5. Fill in your name and student ID number, blacken the appropriate spaces, and sign the mark-sense sheet.
 6. Mark the division and section number of your class and blacken the corresponding circles, including the circles for the zeros. If you do not know your division and section number ask your instructor.
 7. There are 10 questions, each worth 10 points. Blacken your choice of the correct answer in the spaces provided. Turn in BOTH the answer sheet and the question sheets to your instructor when you are finished.
 8. No books, notes, or calculators may be used.
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1) The y intercept of the line passing through $(4, 1)$ and perpendicular to $x + 5y - \sqrt{2} = 0$ is:

A) $\frac{7}{9}$

B) $\frac{19}{5}$

C) -19

D) 21

E) $\frac{9}{5}$

2

2) The equation $x^2 + y^2 - 2x - 4y + 1 = 0$ represents

- A) A circle with center $(1, 1)$ and radius 1
- B) A circle with center $(1, 2)$ and radius 2
- C) A straight line passing through $(1, 0)$.
- D) A parabola.
- E) An ellipse centered at $(1, 1)$.

3) The domain of the function

$$f(x) = \frac{1}{\sqrt{1 - |5 - 2x|}}, \text{ is}$$

- A) $(2, 3)$
- B) $[2, 3)$
- C) $(3, 5)$
- D) $(3, 5]$
- E) $(\frac{5}{2}, \frac{7}{2})$

4) Which of the following values of x satisfy

$$\ln(x) + \ln(x + 1) - \ln(5x) = 0?$$

A) $x = 0$ and $x = 4$

B) $x = 0$

C) $x = 4$

D) $x = 3$

E) $x = 3$ and $x = 4$

5)

$\cos\left(\tan^{-1}\left(\frac{3}{4}\right)\right)$ is equal to

A) $\frac{1}{5}$

B) $\frac{2}{5}$

C) $\frac{3}{5}$

D) $\frac{4}{5}$

E) 1

4

6) If $f(x) = (x - 4)^{\frac{1}{3}}$, then $f^{-1}(2)$ is equal to

A) 12

B) 8

C) 16

D) 32

E) -12

7) The graph of $g(x) = x^2 + 4x + 6$ is obtained from the graph of $y = x^2$ by

A) Reflecting it about the x -axis and moving it down 1 unit

B) Moving it left 2 units and up 2 units

C) Moving it right 2 units and down 1 unit

D) Moving it left 2 units and down 2 units

E) Moving it left three units.

8) The limit

$$\lim_{x \rightarrow 2} \frac{x^2 - 5x + 6}{2(x - 2)} \text{ is equal to}$$

- A) 1
- B) $\frac{3}{2}$
- C) -1
- D) -3
- E) $-\frac{1}{2}$

9) The value of the one-sided limit

$$\lim_{x \rightarrow 1^-} \frac{\sqrt{x+3} - 2}{|x-1|} \text{ is}$$

- A) $\frac{1}{2}$
- B) $\frac{1}{2+\sqrt{2}}$
- C) 4
- D) $\frac{1}{4}$
- E) $-\frac{1}{4}$

10) Which of the following statements is true about the function f defined by

$$f(x) = \begin{cases} \frac{x^2 - 3x - 4}{(x^2 - 16)(x + 1)}, & \text{if } x \neq 4, x \neq -1 \\ f(-1) = 3, f(4) = 0 \end{cases}$$

- A) f is continuous at $x = -1$ and at $x = 4$
 B) f is not continuous at $x = -1$ and at $x = 4$
 C) f is continuous at $x = 4$ but not continuous at $x = -1$
 D) f is continuous at $x = -1$ but not continuous at $x = 4$
 E) f is continuous at every point x in its domain.