

Name: _____

10-digit PUID: _____

Lecturer: _____

Recitation Instructor: _____

Recitation Time: _____

Instructions:

1. This package contains 14 problems worth 7 points each.
2. Please supply all information requested above. On the scantron sheet print your name, your division-section number and 10-digit PUID and fill in the corresponding circles. Use a pencil on the scantron sheet. You get 2 points for supplying all information correctly.
3. Work only in the space provided, or on the backside of the pages. Circle your choice for each problem in this booklet, and mark your answer on the scantron sheet.
4. No books, notes, calculator or any electronic devices may be used on this exam.

Answers:

1. A 2. E 3. C 4. B 5. C 6. E

7. E 8. B 9. C 10. A 11. B

12. D 13. D 14. A

1. The solution of the inequality $x^2 - x < 2$ is

- A. $(-1, 2)$
- B. $(-\infty, -1) \cup (2, \infty)$
- C. $(-\infty, 2)$
- D. $(-1, \infty)$
- E. $(-\infty, \infty)$

2. Line L_1 contains $(1, 4)$ and $(2, -1)$; line L_2 is perpendicular to L_1 and passes through $(-1, 3)$. An equation of L_2 is

- A. $x + y - 2 = 0$
- B. $x + 5y - 14 = 0$
- C. $2x - y + 5 = 0$
- D. $5x + y + 2 = 0$
- E. $x - 5y + 16 = 0$

3. Find the center C and radius R of the circle $x^2 + y^2 + 2x - 2y - 4 = 0$.

- A. $C(1, 1), R = 6$
- B. $C(-1, 1), R = 6$
- C. $C(-1, 1), R = \sqrt{6}$
- D. $C(1, -1), R = \sqrt{6}$
- E. $C(1, 1), R = \sqrt{6}$

4. If $\cos \theta = 3/5$ and $3\pi/2 \leq \theta \leq 2\pi$, then $\tan \theta =$

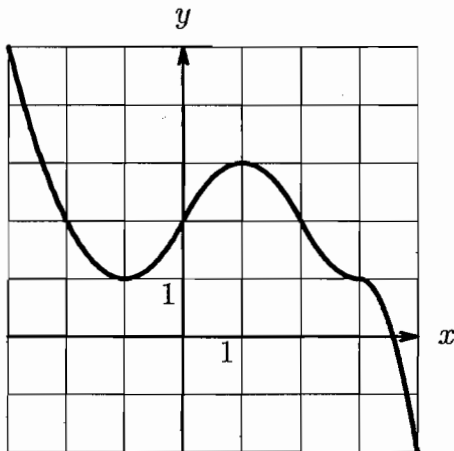
- A. $4/5$
- B. $-4/3$
- C. $4/3$
- D. $-3/4$
- E. $3/4$

5. The domain of the function $f(x) = \sqrt{|x-1|} - 2$ is

- A. $(-\infty, 3]$
- B. $[2, \infty)$
- C. $(-\infty, -1] \cup [3, \infty)$
- D. $[-1, 3]$
- E. $(-\infty, -2] \cup [2, \infty)$

6. The graph of function g is given below. $(g \circ g)(-1) =$

- A. -2
- B. -1
- C. 0
- D. 2
- E. 3

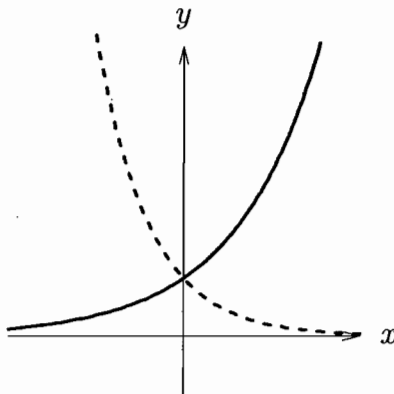


7. The graph of g is obtained from the graph of f by first compressing horizontally by a factor of 2, then reflecting about the y axis, and finally shifting to the left by 3 units. In other words, $g(x) =$

- A. $f\left(\frac{-(x+3)}{2}\right)$
- B. $f\left(\frac{-x}{2} + 3\right)$
- C. $-2f(x+3)$
- D. $f(-2x+3)$
- E. $f(-2(x+3))$

8. Which two functions could be graphed below?

- A. $y = 1/2^x$, $y = 2^x$
- B. $y = 1/3^x$, $y = 2^x$
- C. $y = 3^x$, $y = 1/2^x$
- D. $y = -3^x$, $y = 2^x$
- E. $y = 3^x$, $y = -2^{-x}$



9. Which of the functions $f(x) = |x + 1|$, $g(x) = 2x + 1$ is one-to-one?

- A. Both are
- B. Only f
- C. Only g
- D. Neither
- E. None of the above answers is correct.

10. $5 \log_{10} 2 + \log_8 1 - \log_{10} 4 =$

- A. $\log_{10} 8$
- B. $\log_{10} 6$
- C. $\log_{80} 48$
- D. $\log_{80} 29$
- E. $\log_{18} 29$

11. Which is true: if $a > 0$ then I. $a^b a^c = a^{b+c}$; II. $a^b + a^c = a^{bc}$

- A. Both are
- B. Only I
- C. Only II
- D. Neither
- E. None of the above answers is correct.

12. Solve the equation $e^{3x-2} - 1 = 0$.

- A. $x = \ln \sqrt{3}$
- B. $x = 1 + \ln(3/2)$
- C. $x = 1$
- D. $x = 2/3$
- E. $x = 3/5$

13. Given the graph of $y = g(x)$, which is true?

I. $\lim_{x \rightarrow 1} g(x) = 0$

II. $\lim_{x \rightarrow 1^-} g(x) = 1$

III. $\lim_{x \rightarrow 1^+} g(x) = 0$

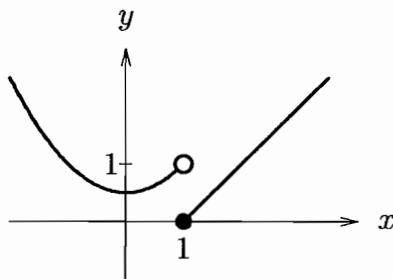
A. Only I

B. Only II

C. Only I and III

D. Only II and III

E. All are true.



14. $\lim_{x \rightarrow -1} \frac{t+1}{t^2 - 2t - 3} =$

A. $-1/4$

B. $-1/2$

C. 0

D. $1/2$

E. 1