

- A. Sign your bubble sheet on the back at the bottom in ink.
- B. In pencil, write and encode in the spaces indicated:
- 1) Name (last name, first initial, middle initial)
 - 2) UF ID number
 - 3) Section number
- C. Under “special codes” code in the test ID numbers as shown below.
- | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | ● | 4 | 5 | 6 | 7 | 8 | 9 | 0 |
| 1 | 2 | 3 | ● | 5 | 6 | 7 | 8 | 9 | 0 |
- D. At the top right of your answer sheet, for “Test Form Code”, encode D.
- | | | | | |
|---|---|---|---|---|
| A | B | C | ● | E |
|---|---|---|---|---|
- E. 1) The time allowed is 90 minutes.
- 2) You may write on the test.
 - 3) Raise your hand if you need more scratch paper or if you have a problem with your test. **DO NOT LEAVE YOUR SEAT UNLESS YOU ARE FINISHED WITH THE TEST.**
- F. KEEP YOUR BUBBLE SHEET COVERED AT ALL TIMES.**
- G. When you are finished:
- 1) Before turning in your test **check carefully for transcribing errors**. Any mistakes you leave in are there to stay.
 - 2) You must turn in your scantron and tearoff sheets to your discussion leader or exam proctor. Be prepared to show your picture I.D. with a legible signature.
 - 3) The answers will be posted in Canvas within one day after the exam. Your discussion leader will return your tearoff sheet with your exam score in discussion. Your score will also be posted in Canvas within one week of the exam.

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- Which real value(s) of x satisfy the equation $\left(\frac{1}{5}\right)^{3x+1} \cdot 25^{3x} = \frac{1}{25}$?
A) $x = -1$ **B)** $x = 1$ **C)** $x = \frac{1}{3}$ **D)** No real solutions exist.
E) $x = -\frac{1}{3}$
- What real values of x satisfy the equality $\ln(x-1) + \ln(3) = \ln(x)$?
A) $x = \frac{3}{2}$ **B)** $x = \frac{1}{2}$ **C)** $x = -\frac{1}{2}$ **D)** $x = 0$ **E)** $x = -\frac{3}{2}$
- Which real values of x satisfy the equation $\sqrt{4x+3} = 2\sqrt{x-1} + 1$?
A) $x = \frac{16}{9}$ **B)** $x = 0$ **C)** $x = \frac{13}{4}$ **D)** $x = \frac{9}{4}$ **E)** $x = 1$
- Which of the following is the most condensed form of the following logarithmic expression: $\log_2(x^2) - 3\log_2(x+1) + 2\log_4(3x)$
A) $\log_2\left(\frac{x^2}{(x+1)^3}\right) + 2\log_4(3x)$ **B)** $\log_2\left(\frac{9x^4}{(x+1)^3}\right)$
C) $\log_2\left(\frac{x^2}{(x+1)^3}\right) + \log_4(9x^2)$ **D)** $\log_2\left(\frac{3x^3}{(x+1)^3}\right)$ **E)** $\log_2\left(\frac{\sqrt{3}x^{\frac{5}{2}}}{(x+1)^3}\right)$
- You have a student loan that accrues interest at a 12% APR (annual percentage rate). If the interest is compounded weekly, what is the growth/decay multiplier in the exponential model of how much you owe on your loan?
A) $\frac{1303}{1300}$ **B)** 12 **C)** 1.12 **D)** $\frac{3}{1300}$ **E)** $\frac{1297}{1300}$
- What is the domain of the radical function $f(x) = \sqrt[3]{-x-1}$?
A) $[1, \infty)$ **B)** $[-1, \infty)$ **C)** $(-\infty, -1]$ **D)** $(-\infty, \infty)$ **E)** $(-\infty, 1]$
- Which of the following is equivalent to the expression $\ln\left(\frac{e^3\sqrt[3]{x}}{xy}\right)$?
A) $e^3 - \frac{2}{3}\ln(x) - \ln(y)$ **B)** $3 - \frac{2}{3}\ln(x) - \ln(y)$ **C)** $3 - \frac{2}{3}\ln(x) + \ln(y)$
D) $e^3 - \frac{2}{3}\ln(x) + \ln(y)$ **E)** $3 + \frac{2}{3}\ln(x) + \ln(y)$
- Which of the following is equivalent to the expression $\sqrt{125x^3y^6} - \sqrt{5x}$?
A) $(5xy^3 - 1)\sqrt{5x}$ **B)** $(5|xy^3| - 1)$ **C)** $(5|xy^3 - 1|)\sqrt{5x}$
D) $(5|xy^3| - 1)\sqrt{5x}$ **E)** $5|xy^3|\sqrt{5x}$
- What is the domain of the real-valued (ie no non-real numbers allowed) function $f(x) = 2\sqrt{-x+1} + 7$?
A) $[1, \infty)$ **B)** $(1, \infty)$ **C)** $(-\infty, 1]$ **D)** $(-\infty, 1)$ **E)** $(-\infty, -1]$
- What is the domain of function $f(x) = -3\ln(-2x-14) + 1$?
A) $(-\infty, 7]$ **B)** $[7, \infty)$ **C)** $(-\infty, 7)$ **D)** $(-\infty, -7)$ **E)** $(7, \infty)$
- Which of the following is equivalent to $\sqrt{375x^6(x+2)^3}$?
A) $25x^3(x+2)\sqrt{3(x+2)}$ **B)** $5|x^3(x+2)|\sqrt{15(x+2)}$
C) $5x^3(x+2)\sqrt{15(x+2)}$ **D)** $5x^2(x+2)\sqrt{3}$ **E)** $5|x^3(x+2)|\sqrt{15x+2}$
- Which value(s) of x satisfy the equation $\sqrt{x} - \sqrt{x+4} = 2x$?
A) No real solutions. **B)** $x = 0$ **C)** $x = 4$ **D)** $x = -4$ **E)** $x = 1$

13. Use properties of logs to simplify the expression $\log_2(16xy^3) - \log_2(4xy)$.

- A) $2\log_2(4y)$ B) $2 + 2\log_2(y)$ C) $\frac{\log_2(16xy^3)}{\log_2(4xy)}$ D) $\log_2(y)$
E) $2\log_2(y)$

14. What is the domain of the following function (**Hint:** all values in the domain must work for **all** pieces of the function)

$$f(x) = \sqrt{x-2} + \sqrt[4]{2-x}$$

- A) $(-\infty, 2]$ B) $(-2, 2)$ C) $[-2, \infty)$ D) $[-2, 2]$ E) $(-\infty, \infty)$

15. Which of the following is equivalent to the expression $\frac{e^{2x^2} \cdot e^x}{\sqrt{e}}$?

- A) $e^{(2x^2+x-\frac{1}{2})}$ B) e^{4x^3} C) $e^{(2x^2-\frac{x}{2})}$ D) $4x^3$ E) $e^{(2x^3-\frac{x}{2})}$

Name:

Section:

Signature:

UFID:

YOU MUST SHOW ALL WORK TO GET CREDIT!**Instructions:** Remember to show all work!

- 1) John got a new visa card with a promotion: No payments for the first 6 months! Unfortunately, it still accrues interest, at a rate of 18% APR, compounded daily. If he immediately bought \$2000 worth of merchandise on his card, (and didn't buy anything else during the promotion period) how much would be on his card at the end of the promotion period? (You can assume each month is 30 days; You do not need to simplify)

How much of the previous amount is interest? (Note: you still don't need to simplify!)

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2) Solve the following equation for x :

$$\log_4(x^2 + 2x + 1) - \log_2(x) = \log_8(27)$$

3) Find all real solutions for x in the following equation:

$$\sqrt[3]{x-2} = \sqrt{x}$$