Suffolk County Community College

Michael J. Grant Campus

Department of Mathematics

Spring 2025

MAT 120
College Algebra and Trigonometry

Final Exam

Instructor:

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Please print the requested information in the spaces provided:

Student:

Name:

Student Id:

Email: *include to receive the final grade via email* ONLY *if you are not getting email updates*

- *Notes and books are permitted on this exam.*
- *Graphing calculators, smartwatches, computers, cell phones and any other communication-capable devices are prohibited. Their mere presence in the open (even without use) is a sufficient reason for an immediate dismissal from this exam with a failing grade.*
- *You will not receive full credit if there is no work shown, even if you have the right answer. Please don't attach additional pieces of paper: if you run out of space, please ask for another blank final.*

Problem 1. Solve equation $\ln(x) - 3 = \ln(x+2)$.

Space for your solution:

Problem 2. Solve the equation $(\log_7 x) - 1 = \log_7(x+1)$.

Space for your solution:

Problem 3. Solve the equation $5^{2x} = \frac{1}{3^{x-1}}$.

Space for your solution:

Problem 4. Solve the equation $2^{x-2} = 2^x + 3$.

Space for your solution:

Problem 5. Consider the system of linear equations: $\begin{cases} x_1 + x_2 - 2x_3 + x_4 + 3x_5 = 1 \\ 2x_1 - x_2 + 2x_3 + 2x_4 + 6x_5 = 2 \\ 3x_1 + 2x_2 - 4x_3 - 3x_4 - 9x_5 = 3 \end{cases}$

(1). Perform the downward Gauss-Jordan method on the augmented matrix of the above system.

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(2). Obtain the reduced row echelon form of the augmented matrix of the original linear system (i.e. perform the upward Gauss-Jordan method on the augmented matrix, obtained in the previous subproblem).

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(3). Find a particular solution of the original system of linear equations and a system of fundamental solutions of the associated homogeneous system.

Space for your solution: