

Suffolk County Community College
Michael J. Grant Campus
Department of Mathematics

Wednesday, May 8, 2024

MAT 125
Pre-Calculus II

Final Exam

Instructor:

Name: Alexander Kasiukov

Office: Suffolk Federal Credit Union Arena, Room A-109

Phone: (631) 851-6484

Email: kasiuka@sunysuffolk.edu

Web Site: <http://kasiukov.com>

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. Consider the expression $\arctan(\tan(5))$.

(1). Draw 5 , $\tan(5)$ and $\arctan(\tan(5))$ in the same picture of a unit circle, showing how they are interconnected.

Space for your solution:

(2). Use the above picture to express $\arctan(\tan(5))$ without any trigonometric functions.

Space for your solution:

Problem 2. Solve the equation $\cos(t) + \sin(t) = 0$.

Space for your solution:

Problem 3. Solve the equation $\sin(2t) = \tan(t)$.

Space for your solution:

Problem 4. In this problem, we will study $\cos(\operatorname{arccot}(x))$.

(1). Suppose $t \in [0, \pi]$ and $\cot(t) = 2$. Mark the $2, t$ and $\cos(t)$ in the proper locations in the picture of the unit circle.

Space for your solution:

(2). Use the above picture to express $\cos(t)$ without trigonometric functions.

Space for your solution:

(3). For all $x \in \mathbb{R}$, express $\cos(\operatorname{arccot}(x))$ without trigonometric functions.

Space for your solution: