

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

Monday, December 17, 2018

MAT 125: Pre-Calculus II
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, computers, cell phones and any 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. Use back pages if necessary. Please don't attach additional pieces of paper: if you run out of space, please ask for another blank final.*

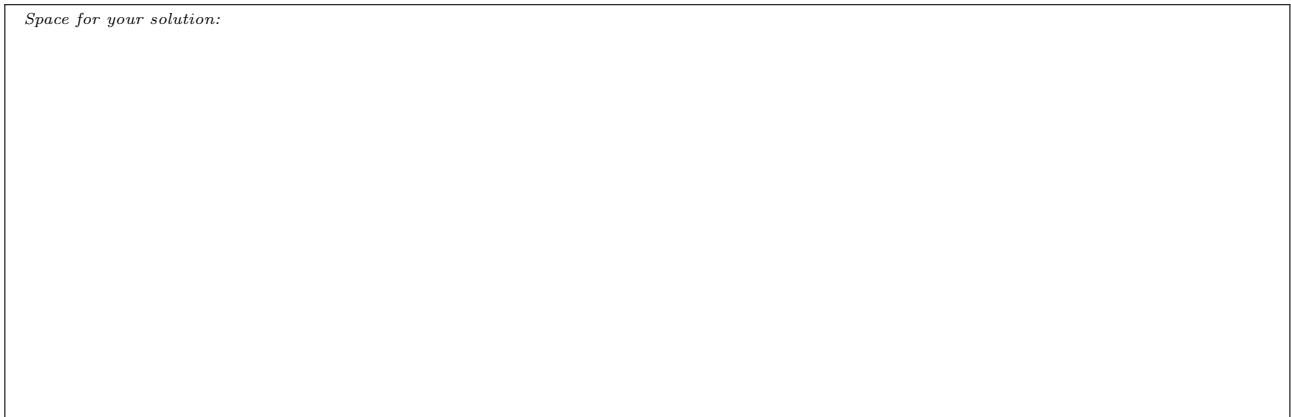
Problem 1. Consider the expression $\arctan(\tan(5))$. Draw 5 , $\tan(5)$ and $\arctan(\tan(5))$ in the same picture, showing how they are interconnected.

Space for your solution:



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

Space for your solution:



Problem 3. Draw the elements of $\tan\left(\arccos\left(-\frac{2}{3}\right)\right)$ to express it without trigonometric functions.

Space for your solution:

Problem 4. Express $\tan\left(\arccos(x)\right)$ without trigonometric functions and determine for which x this expression makes sense.

Space for your solution:

Problem 5. Solve the equation $\sin(2t) = \tan(t)$.

Space for your solution:

Problem 6. Find all complex numbers z , such that $z^3 = -i$. (You may use polar coordinates, but the final answer must explicitly give the $\text{Re}(z)$ and $\text{Im}(z)$.) Graph all solutions on the (x, y) plane.

Space for your solution: