

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

Wednesday, May 11, 2022

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, 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 $\arccos(\cos(-4))$.

(1). Draw -4 , $\cos(-4)$ and $\arccos(\cos(-4))$ in the same picture with the unit circle, showing how they are interconnected.

Space for your solution:

(2). Use the above picture to express $\arccos(\cos(-4))$ without any trigonometric functions.

Space for your solution:

Problem 2. Solve the equation $\cos(2\theta) = 1 + \sin \theta$.

Space for your solution:

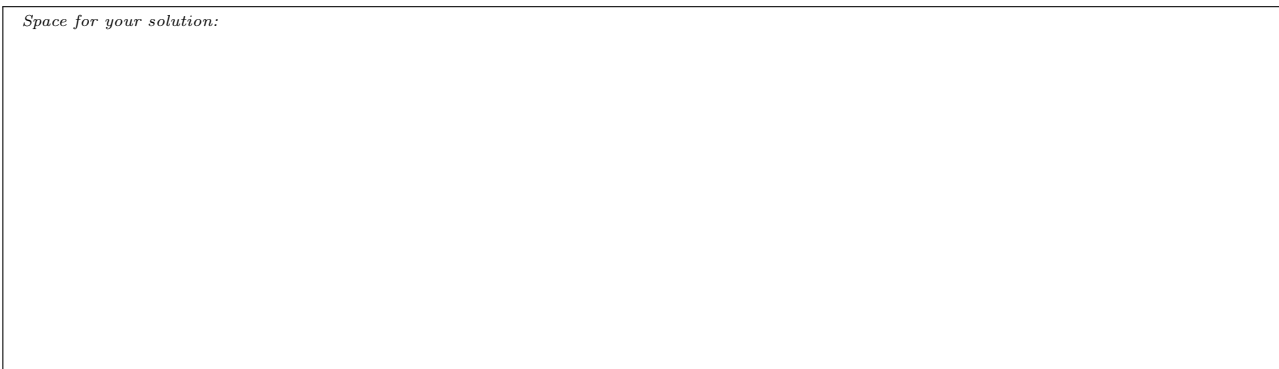
Problem 3. Solve the equation $\cot(t) = \sin(t)$.

Space for your solution:

Problem 4. In this problem, we will study $\cos(\arctan(y))$.

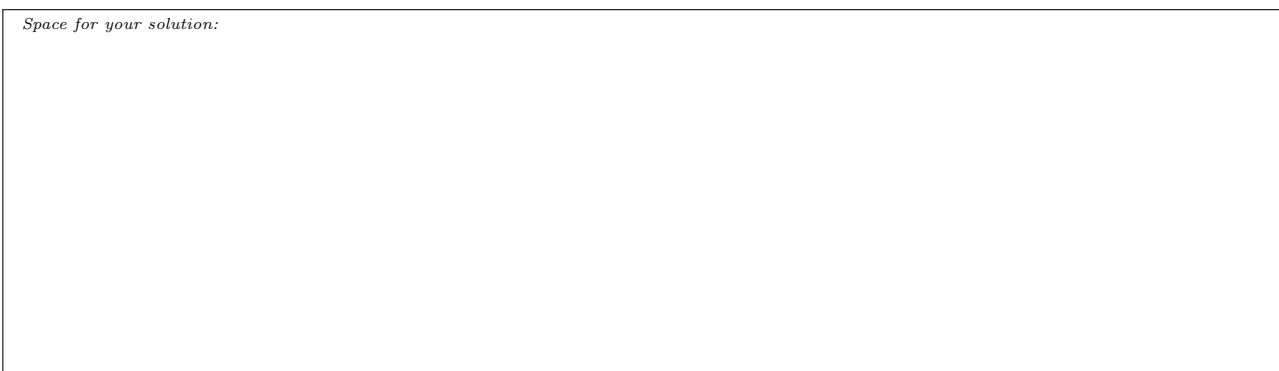
(1). Suppose $\theta \in [0, \pi]$ and $\tan(\theta) = -2$. Draw -2 , θ and $\cos(\theta)$ in the unit circle.

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(2). Using the above picture, find $\cos(\theta)$.

Space for your solution:



(3). Find $\cos(\arctan(-2))$. More specifically, find an expression of this quantity that does not use any trigonometric functions. Can the work done for the previous sub-problem be used? To what extent?

Space for your solution:

(4). For an arbitrary real number y , find $\cos(\arctan(y))$. More specifically, find an expression of this quantity that does not use any trigonometric functions.

Space for your solution: