MATH 253   Name: _____

Quiz 9   April 20, 2020

Instructions: You may upload this quiz any time before 8 am on Wednesday, April 22.

This quiz is untimed and, if you do it correctly, you will both get a perfect score (!) and get some feedback on what you should study more. Please answer all questions on this first page.

- When you find time, sit down and take this quiz with no notes or aid. Time yourself, then take a break if you like. No need to do this quiz the second time right away.

- Now using your book or any other resources, but making sure you think, redo any problems on the quiz that you did not get correct. Upload only your best answers.

Completing the quiz for the first time without any aids took me (fill in the time) _____.

Use the space below to explain what was difficult for you, or generally to provide feedback on your solutions.

_____

1. Consider the angle $\theta = \arccos(\frac{-5}{13})$. Answer the following:

    (a) What quadrant is θ is? Why?

    (b) Give the values of $\sin(\theta)$ and $\tan(\theta)$.

2. Determine, **with justification**, whether the following vector fields defined on $\mathbb{R}^2$ are conservative or not. Then determine the value of the line integral requested.

(a) $\mathbf{F}(x, y) = \langle xy^2, -x^2 \rangle$

My answer: (Circle one) $\mathbf{F}(x, y)$ is / is not conservative.

Compute $\displaystyle\int_C \mathbf{F} \cdot d\mathbf{r}$ where C is the line segment joining $a = \langle 0, 0 \rangle$ to $b = \langle 3, 2 \rangle$.

(b) $\mathbf{G}(x, y) = \langle ye^x + \sin y, \ e^x + x \cos y \rangle$

My answer: (Circle one) $\mathbf{G}(x, y)$ is / is not conservative.

Compute $\displaystyle\int_C \mathbf{G} \cdot d\mathbf{r}$ where C is the line segment joining $a = \langle 0, \frac{3\pi}{2} \rangle$ to $b = \langle 0, \frac{13\pi}{6} \rangle$.