

1. This is an open notes and open book quiz. You may also use resources available on ELC or the class website, as well as a calculator (although a calculator should not be necessary).
 2. You may not use any other resources and may not consult with any person other than the course instructor.
 3. **All answers should be exact**, i.e. no numerical approximations unless otherwise specified.
 4. You are graded on your solution, but **more importantly you also graded on your supporting arguments and work you use to justify your answers.**
 5. **Please submit your completed quiz on Gradescope by Friday, April 23.**
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By providing my signature below I acknowledge that I abide by the University's academic honesty policy.
This is my work, and I did not get any help from anyone else:

Name (sign): _____

Name (print): _____

1. Determine the **exact** numerical values of each expression below. Do not use a calculator, show each step, and provide a brief justification for each step.

(a) (2 points) $\cos \left(\arccos \left(\frac{\sqrt{5}}{5} \right) \right)$

(b) (3 points) $\arccos \left(\cos \left(\frac{5\pi}{4} \right) \right)$

2. (5 points) Write the expression below as an algebraic expression that contains no trigonometric functions. Show each step and provide a full justification for your result.

$$\tan \left(\arcsin \left(\frac{3x}{\sqrt{9x^2 + 8}} \right) \right).$$

3. (5 points) Verify the identity

$$\frac{\tan(\alpha) + \tan(\beta)}{\tan(\alpha)\tan(\beta) - 1} = \frac{\sin(\alpha)\cos(\beta) + \cos(\alpha)\sin(\beta)}{\sin(\alpha)\sin(\beta) - \cos(\alpha)\cos(\beta)}.$$

Show each step, and provide a brief justification for each step.