

# Math 229 Quiz 2

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You may use only Julia or `math229.github.io` – no other websites.

NAME: Key

**Problem 1.**

Define the function  $f(x) = \frac{x \cos(3x + 1) + 2 \log(x)}{1 + x^2}$  in Julia.

$$f(x) = (x * \cos(3x+1) + 2 \log(x)) / (1 + x^2)$$

Compute the following values. Round answers to 4 decimal places.

$f(3) = \underline{-0.0320} \qquad f(7) = \underline{-0.0622}$

$f(e/2) = \underline{0.3859} \qquad f(\pi^2) = \underline{0.1159}$

**Problem 2.**

The ternary operator is as follows: `predicate ? expression1 : expression2`  
 For example, function  $f(t)$  can be defined in Julia by `f(t) = t <= 10 ? t : 1-t^2`

$$g(x) = \begin{cases} x^4 + 3x - 5 & x < 4 \\ e^{3x-1} \cos x & x \geq 4 \end{cases}$$

Express  $g(x)$  in Julia using the ternary operator.

$$g(x) = x < 4 ? x^4 + 3x - 5 : e^{3x-1} * \cos(x)$$

Compute the following values. Round answers to 4 decimal places.

$g(e/2) = \underline{2.4898} \qquad g(\pi^2) = \underline{-2.3999}$

$g(\sqrt{5}) = \underline{26.7082} \qquad g(\sqrt{\pi}) = \underline{10.1870}$