

Math 229 Quiz 2a

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

NAME: Solution

Problem 1.

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

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

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

$$f(3) = \underline{-0.51835} \quad f(-1) = \underline{\text{DomainError}}$$

$$f(e^2) = \underline{-0.29539} \quad f(\pi/2) = \underline{0.62121}$$

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`

$$g(x) = \begin{cases} x^3 - 3x^2 - 2 & x < 2 \\ e^{2x-1} \sin x & x \geq 2 \end{cases}$$

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

$$g(x) = x < 2 ? x^3 - 3 * x^2 - 2 : \exp(2 * x - 1) * \sin(x)$$

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

$$g(e^{1/2}) = \underline{-5.67316} \quad g(\pi/2) = \underline{-5.52642}$$

$$g(\sqrt{5}) = \underline{25.33762} \quad g(\sqrt{\pi}) = \underline{-5.85645}$$

Math 229 Quiz 2b

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NAME: Solutions

Problem 1.

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

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

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

$$f(3) = \underline{0.52517} \quad f(-1) = \underline{\text{Domain Error}}$$

$$f(e^2) = \underline{0.34684} \quad f(\pi/2) = \underline{1.21020}$$

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`

$$g(x) = \begin{cases} x^3 + 2x^2 - 4 & x < 2 \\ e^{x-2} \cos x & x \geq 2 \end{cases}$$

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

$$g(x) = x < 2 ? x^3 + 2 * x^2 - 4 : \exp(x - 2) * \cos(x)$$

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

$$g(e^{1/2}) = \underline{5.91825} \quad g(\pi/2) = \underline{4.81059}$$

$$g(\sqrt{5}) = \underline{-0.78163} \quad g(\sqrt{\pi}) = \underline{7.85151}$$