

MATH31B: Week 1

TA: Ben Szczesny

Last updated: 2018/04/02

Information

The course Webpage is:

<http://www.math.ucla.edu/~nbhaskh/M31B-2018Spring/homepage.html>

My Homepage where I'll upload stuff from discussions:

<http://www.math.ucla.edu/~ben.szczesny/MATH31B-S18/coursehome.html>

I taught this last quarter and you can find the material from those discussions at:

<http://www.math.ucla.edu/~ben.szczesny/MATH31B-W18/coursehome.html>

Questions

Question 1. For each of the following functions, determine if they have an inverse or not. If they do, find it. If they don't, restrict the domain such that they do have an inverse and then find it.

(a) $f(x) = x^3 + 3$,

(b) $f(x) = (x - 3)^2$,

(c) $f(x) = \frac{3x + 2}{5x - 1}$. Note that the domain of this function is $D = \{x : x \neq \frac{1}{5}\}$.

Question 2. Without a calculator, calculate the following

(a) $\log_3(27)$

(b) $\ln(e^3) + \ln(e^4)$

(c) $\log_7(49^2)$

Question 3. Differentiate the following

(a) $f(x) = e^{\cos(x)}$

(b) $f(x) = 2^x$, hint $2 = e^{\ln(2)}$.

(c) $f(x) = \ln(3x^3 + 2x)$

(d) $f(x) = \ln\left(\frac{x^2 + 1}{x - 1}\right)$