

Week 5 Quiz

1. Does $\sin(x + y) = \sin x + \sin y$ for all x, y ? If not, give a pair of values (a, b) for which $\sin(a + b) \neq \sin a + \sin b$.

2. Does $p(x) = q(x)$, where $p(x) = (2x + 1)(x + 5)$, and $q(x) = 2x^2 + 7x + 5$? If not, give a value a for which $p(a) \neq q(a)$.

3. Expand and simplify $f(x, y) = (x + y)(x^2 - xy + y^2)$.

4. Evaluate

$$\lim_{x \rightarrow -1} \frac{x^3 + 1}{x + 1}$$

if it exists. If it does not, explain why. (Hint: use the previous question.)

5. Based on your answer to the previous question, is

$$f(x) = \begin{cases} (x^3 + 1)/(x + 1) & x \neq -1 \\ 4 & x = -1 \end{cases}$$

continuous at $x = -1$? Why?