

Math 2215 - Calculus 1

Homework #1 - 2005.08.24

Due Date - 2005.08.31

1. Show that $p(x) = a_0 + a_2x^2 + a_4x^4 + \dots + a_{2n}x^{2n}$ is even, where the a_j 's are real.
2. Given that $f(x) = x^2$ and $g(x) = \sqrt{x}$, compute the domains and ranges of the composition functions $(f \circ g)(x) = f(g(x))$ and $(g \circ f)(x) = g(f(x))$.
3. Compute the values of c such that $\sin(x + c)$ is an even function.
4. Determine the domain and range of the function $L(x) = \ln(-x + 2)$.
5. Solve the expression $\ln(-y + 2) = x$ for y .
6. What is the relationship between your answer to problem 5 and problem 4?
7. Simplify the expression $\tan(\sin^{-1}(x))$.
8. Solve the equation $e^{2x-x^2} = \ln(4)$ for the variable x .
9. Consider the function $f(x) = x^4 + x^2 + 1$ with domain $[0, \infty)$ and range $[1, \infty)$. Find the inverse of $f(x)$ and state its domain and range. (*Hint: As an intermediary step, let $z = x^2$.*)