Worksheet 2, Math 1551, Fall 2017

Sections from Thomas 13^{th} Edition: 1.5, 1.6

Exercises

1. If possible, give at least one example of a function for each of the following cases.
   (a) An odd function that not have an inverse on the domain $[-1, 1]$.
   (b) An even function that is invertible on the domain $[-1, 1]$.
2. State the domain and range of the functions.
   (a) $\ln(25 - x^2)$
   (b) $\cos^{-1}(\cos x)$
   (c) $\cos(\cos^{-1} x)$
3. Solve for t.
   (a) $3^{t+1} = r$, where r is any real number
   (b) $\ln t + \ln(t + 1) = 1$
   (c) $\log_2(\log_3(\log_4 t)) = m$
   (d) $2^t + 2^{-t} = \frac{17}{4}$
4. Find the inverse of $f(x)$.
$$f(x) = \frac{e^{2x} - 1}{e^{2x} + 1}$$
5. Identify the points where $f(x) = 4^x$ and $g(x) = 2^{-x^2}$ intersect.
6. A certain car costs \$20,000, and its value decreases by 20% every year.
   (a) What is the value of the car after t years?
   (b) How long does it take for the value of the car to depreciate to half its original value?