EXTRA EXERCISES

1. Week 5

1. Approximate the irrational number e such that the approximation error is less than 10^{-6}.

2. Find the stationary points of $f(x, y, z) = \cos 2x \sin y + z^2$ and determine whether they are local minima, maxima, or saddle point.

3. Function $z = z(x, y)$ for $x \leq 0, y \leq 0$ is determined by the equation $z + y - xe^z = 1 + \cos y$, calculate $\frac{\partial^2 z}{\partial x^2}$.