Test 1 solutions: CS 5381 Analysis of Algorithms

1. (a)

$$\begin{aligned}\Omega(g(n,m)) &= \{f(n,m): \text{ there exist positive constants } c, n_0, \text{and } m_0 \\ &\quad \text{such that } 0 \leq cg(n,m) \leq f(n,m) \text{ for all } n \geq n_0 \text{ or } m \geq m_0\}\end{aligned}$$

1. (b)

$$\begin{aligned}\Theta(g(n,m)) &= \{f(n,m): \text{ there exist positive constants } c_1, c_2, n_0, \text{and } m_0 \\ &\quad \text{such that } 0 \leq c_1 g(n,m) \leq f(n,m) \leq c_2 g(n,m) \text{ for all } n \geq n_0 \text{ or } m \geq m_0\}\end{aligned}$$

2. See problem 7 of assignment 1.