

# MATH 4640 Numerical Analysis - HW 1 Solutions

Austin Barton

January 13, 2025

## Problem 1:

**Solution.** i. a)  $2^4 * 1 + 2^3 * 1 + 2^2 * 1 + 2^1 * 0 + 2^0 * 1 + 2^{-1} * 1 + 2^{-2} * 0 + 2^{-3} * 1 + 2^{-4} * 1 + 2^{-5} * 1 = 16 + 8 + 4 + 1 + 0.5 + 0.125 + 0.0625 + 0.03125 = 29.71875$

b)  $16^2 * 2 + 16^1 * 11 + 16^0 * 3 + 16^{-1} * 15 + 16^{-2} * 15 = 512 + 176 + 3 + 0.9375 + 0.05859375 = 691.99609375$

c)  $\sum_{i=1}^n 2^{i-1} * 1$

d)  $\sum_{i=1}^n 2^{-i} * 1$  ■

ii. a)

b)

c)

## Problem 2:

**Solution.** a)

b)

c)

## Problem 3:

**Solution.** a)

b)

## Problem 4:

**Solution.**

## Problem 5:

**Solution.**

## Problem 6:

**Solution.**

## Problem 7:

**Solution.**

## Problem 8:

**Solution.**