

Boundary Value and Eigenvalue Problem

Iteration 1

$$h = 0.5$$

$$x_0 = 1, \quad y(1) = y_0 = 2, \quad z(1) = z_0 = 2$$

$$m_1(1) = z_0 = 2$$

$$m_1(2) = 6x_0 = 6$$

$$m_2(1) = z_0 + hm_1(2) = 2 + 0.5(6) = 5$$

$$m_2(2) = 6(x_0 + h) = 6(1.5) = 9$$

$$m(1) = \frac{m_1(1) + m_2(1)}{2} = \frac{2 + 5}{2} = 3.5$$

$$m(2) = \frac{m_1(2) + m_2(2)}{2} = \frac{6 + 9}{2} = 7.5$$

$$y(x_1) = y(1.5) = (1) + m(1)h = 2 + 3.5 \times 0.5 = 3.75$$

$$z(x_1) = z(1.5) = z(1) + m(2)h = 2 + 7.5 \times 0.5 = 5.75$$