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Mechanics Engineering

16/ENG051023

Engineering Mathematics

Assignment 4

$$10m_1 - 2m_2 + m_3 = 4$$

$$-2m_1 + 10m_2 - 2m_3 = 12$$

$$-2m_1 - 5m_2 + 10m_3 = 18$$

$$m_1 = 0.2m_2 - 0.1m_3 + 0.4$$

$$m_2 = 0.2m_1 + 0.2m_3 + 1.2$$

$$m_3 = 0.2m_1 + 0.5m_2 + 1.8$$

at initial guess vector at $m_0 = [0, 0, 0]$

$$m_1 = 0 \quad m_1' = 0.2(0) - 0.1(0) + 0.4 = 0.4$$

$$m_2 = 0 \quad m_2' = 0.2(0) + 0.2(0) + 1.2 = 1.2$$

$$m_3 = 0 \quad m_3' = 0.2(0) + 0.5(0) + 1.8 = 1.8$$

$$m_1^2 = 0.2(1.2) - 0.1(1.8) + 0.4 = 0.96$$

$$m_2^2 = 0.2(0.96) + 0.2(1.8) + 1.2 = 1.74$$

$$m_3^2 = 0.2(0.96) + 0.5(1.74) + 1.8 = 2.58$$

$$m_1^3 = 0.2(1.74) - 0.1(2.58) + 0.4 = 0.99$$

$$m_2^3 = 0.2(0.96) + 0.2(2.58) + 1.2 = 1.908$$

$$m_3^3 = 0.2(0.96) + 0.5(1.74) + 1.8 = 2.802$$