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International Institute for Technology and Management



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Tutoring Sheet #5

Unit 76: Management Mathematics –Difference Equations

1. Solve the following Difference Equations:

a. $y_t = 3 y_{t-1} + 4 ; y_0 = 2$

b. $y_{t+3} = 2 y_{t+2} - 5$

c. $y_{t+1} = y_t + 13 ; y_0 = 5$

2. Solve the following difference equations and describe the solution series:

a. $y_{t+2} - y_{t+1} - 2y_t = 3$ with $y_0 = 2 ; y_1 = 2$

b. $4y_{t+2} + 4y_{t+1} + y_t = 2+3t$ with $y_1 = 1 ; y_2 = 2$

c. $y_t + 4y_{t-2} = 15$ with $y_0 = 12 ; y_1 = 11$

d. $y_{t+2} + 4y_{t+1} + 5y_t = 20$

e. $y_t + 4y_{t-2} = 13 - 5t$ with $y_0 = 6 ; y_1 = 8$

3. Consider the following difference equation:

$$y_t + 4y_{t-2} = 22 + 5t \text{ with } y_0 = 1 ; y_1 = 3$$

Solve the above difference equation for y , graph the Solution and describe the graph in words.(LSE 2005)