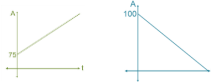
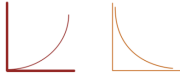
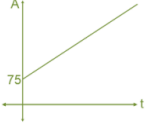
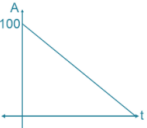
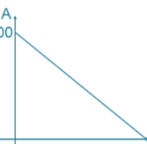
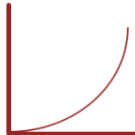
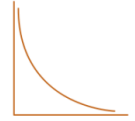


Chapter 3 Financial Maths

	Recurrence Relation	Application	Explicit Rules	Graphs	Mathematica command#
Arithmetic Sequences D Common difference	$t_0 = a, t_{n+1} = t_n + D$ $D = \text{any term} - \text{previous term} = t_1 - t_0 = t_2 - t_1 = t_3 - t_2$	Linear growth or decay For linear growth, $D > 0$ . For linear decay, $D < 0$ .	$t_n = t_0 + n * D$		1 Table/List 2 Graph 3 Write Explicit Rule 4 Future value 9 Finding D 10 Finding D with %
Geometric Sequences R Common Ratio	$t_0 = a, t_{n+1} = R * t_n$ $\text{Common ratio } R = \frac{\text{any term}}{\text{the previous term}} = \frac{t_1}{t_0} = \frac{t_2}{t_1} = \frac{t_3}{t_2} = \dots$	Exponential Growth or decay Graphs of geometric sequences for $R > 0$ are: - $\uparrow$ increasing when $R$ is greater than 1 ( $R > 1$ ), - $\downarrow$ decreasing towards zero when $R$ is less than 1 and greater than zero ( $0 < R < 1$ ).	$t_n = R^n * t_0$		5 Table/List 6 Graph 7 Write Explicit Rule 8 Future value 11 Finding R 12 Finding R $\downarrow$ 13 Finding R $\uparrow$
Arithmetic Sequences D	$v_0 = \text{principal}, v_{n+1} = v_n + D$ $D = \frac{r}{100} * v_0$	Simple Interest	$v_n = v_0 + n * D$		16a Interest in \$ 16b Table graph 16c Future Value
Common difference	$v_0 = \text{Initial Value}, v_{n+1} = v_n - D$ $D = \frac{r}{100} * v_0$	Flat Rate Depreciation	$v_n = v_0 - n * D$		18a depreciate \$ 18b Table graph 18c Future Value
	$v_0 = \text{Initial Value}, v_{n+1} = v_n - D$ $D = \text{Unit cost in dollars}$	Unit Cost Depreciation	$v_n = v_0 - n * D$		19a Table graph 19b Future Value
Geometric Sequences R Common Ratio	$v_0 = \text{principal}, v_{n+1} = R * v_n$ $R = 1 + \frac{r}{100}$	Compound Interest	$v_n = R^n * v_0$		17a Common Ratio 17b Table graph 17c Future Value
Growth Factor Decay factor	$v_0 = \text{Initial Value}, v_{n+1} = R * v_n$ $R = 1 - \frac{r}{100}$	Reduced Balance Depreciation	$v_n = R^n * v_0$		20a Common Ratio 20b Table graph 20c Future Value

Note: Yellow parts need real number, blue parts are formula to calculate, Letter P indicates Compounding monthly etc. Needing rate per month, Monthly Ratio etc.