

GR 12 → MEMO - Lesson 1

1.1) a) $4; 8; 12; \underline{16}; \underline{20}$

b) $T_n = mn + c$
 $4 = 4(1) + c$
 $0 = c$
 $\therefore T_n = \underline{4n}$

c) $T_{40} = 4(40)$
 $\underline{= 160}$

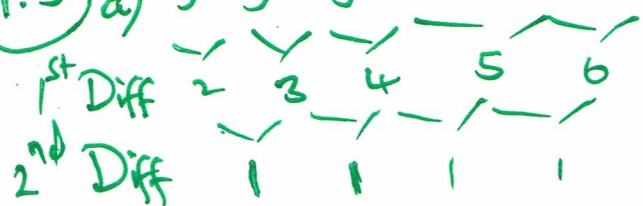
1.3) a) $2; 6; 18; \underline{54}; \underline{162}$

↓
 $2 [1; 3; 9; 27; 81]$

b) $T_n = \underline{2[3^{n-1}]}$

c) $T_{40} = \underline{2[3^{39}]}$

1.5) a) $1; 3; 6; 10; \underline{15}; \underline{21}$



$a = \underline{\frac{1}{2}}$

$2 = 3a + b$
 $2 = 3(\frac{1}{2}) + b$

$\underline{\frac{1}{2} = b}$

$2 + \frac{1}{2} + c = 1$

1.2) a) $1; 3; 9; \underline{27}; \underline{81}$
 $3^0; 3^1; 3^2; 3^3; 3^4$

b) $T_n = \underline{3^{n-1}}$

c) $T_{40} = \underline{3^{39}}$

1.4) a) $1; \frac{1}{9}; \frac{1}{81}; \underline{\frac{1}{729}}; \underline{\frac{1}{6561}}$

$\frac{1}{1}; \frac{1}{9}; \frac{1}{81}; \frac{1}{729}; \frac{1}{6561}$

$\frac{1}{9^0}; \frac{1}{9^1}; \frac{1}{9^2}; \frac{1}{9^3}; \frac{1}{9^4}$

b) $T_n = \frac{1}{9^{n-1}} \quad / \quad 9^{1-n}$

c) $T_n = \frac{1}{9^{39}} \quad / \quad 9^{-39}$

b) $\therefore T_n = \frac{c}{\frac{1}{2}n^2 + \frac{1}{2}n}$
 $= \underline{\frac{1}{2}(n^2 + n)}$

c) $T_{40} = \frac{1}{2}(40^2 + 40)$
 $= \underline{820}$

2.1 $4; 7; 10; \dots$

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$$T_n = 3n + c$$

$$7 = 3(2) + c$$

$$1 = c$$

$$\therefore T_n = 3n + 1$$

2.2 $T_{100} = 3(100) + 1$
 $= 301$

3.1 $8n - 7$

$$T_1 = 8(1) - 7 = 1$$

$$T_2 = 8(2) - 7 = 9$$

$$T_3 = 8(3) - 7 = 17$$

$$\therefore 1; 9; 17; \dots$$

3.3 $\frac{(-1)^n n}{3}$

$$T_1 = \frac{(-1)^1 \cdot 1}{3} = -\frac{1}{3}$$

$$T_2 = \frac{(-1)^2 \cdot 2}{3} = \frac{2}{3}$$

$$T_3 = \frac{(-1)^3 \cdot 3}{3} = -1$$

3.2 $n^3 + 4$

$$T_1 = 1^3 + 4 = 5$$

$$T_2 = 2^3 + 4 = 12$$

$$T_3 = 3^3 + 4 = 31$$

$$\therefore 5; 12; 31; \dots$$

3.4 $\left(1 + \frac{1}{n}\right)^n$

$$T_1 = \left(1 + \frac{1}{1}\right)^1 = 2$$

$$T_2 = \left(1 + \frac{1}{2}\right)^2 = \frac{9}{4}$$

$$T_3 = \left(1 + \frac{1}{3}\right)^3 = \frac{16}{9}$$

$$\therefore 2; \frac{9}{4}; \frac{16}{9}$$
