1

(a) $6 + 12 + 18 \cdots$

1st 23 term

$a = 6$

$d = 6$

$T_{23} = a + (n-1)d$

$= 6 + 22 \times 6 = 132$

$S_{23} = \frac{n}{2}(a + l)$

$= \frac{23}{2}(6 + 132)$

$= 1587$

(b) $-40 - 25 - 10 \cdots$ 15 terms

$a = -40$

$d = +15$

$T_{15} = -40 + (14 \times 15)$

$= 170$

$S_{15} = \frac{15}{2}(-40 + 170)$

$= 975$

(c) $36 + 31 + 26 \cdots$ 18 terms

$a = 36, \; d = -5$

$T_{18} = 36 + (17 \times 5)$

$= 121 - 49$

$S_{18} = \frac{18}{2}(36 - 49)$

$= -117$

(d) $18 + 29 + 40 \cdots + 106$

$106 = 18 + (11)(n-1)11$

$106 - 18 = 11n - 11$

$11n = 106 - 18 + 11$

$n = 7$

$S_7 = \frac{7}{2}(18 + 106)$

$= 6678$

(e) $\frac{1}{4} + 0 - \frac{1}{4} \cdots + \frac{1}{2}$

$a = 1/4 \quad d = -1/4$

$-\frac{3}{2} = (n-1) - 1/4 + 1/4$

$(n-1) = +3/2 \times +2/1 = 6$

$n - 1 = 7 \quad n = 8$

$S_7 = \frac{8}{2}\left(\frac{1}{4} - \frac{3}{2}\right)$

$= -5$

(f) $-.8 - .3 + .2 \cdots + 2.7$

$d = 1/2 \quad a = -0.8$

$2.7 = (n-1)1/2 + 0.8$

$2.7 + 0.8$

$= (3.5)1/2 = n - 1$

$n = 2.75 = 3$

$S_3 = \frac{3}{2}(-0.8 + 2.7)$

$= 2.85$

2

(a) $4 - 8 + 16$

$a = 4$

$r = -2$

$S_9 = \frac{a(1 - r^{n+1})}{(1 - r)}$

$S_9 = \frac{4(1 - -2^{10})}{(1 - -2)} = 1366.67$

(b) $a = 5 \quad r = \frac{2}{3} \times \frac{1}{8} = \frac{1}{3}$

$S_8 = \frac{5\left[\left(1 - \left(\frac{1}{3}\right)^9\right)\right]}{1 - \frac{1}{3}}$

$= 7.4996$

(c)

$S_{11} \quad -3 - 9 - 27$

$a = -3, \quad r = 3$

$S_{11} = \frac{-3(r^{n+1} - 1)}{(r - 1)}$

$= -797160$

3.

(a) $3 - 9 + 27 \ldots + 243$

$a = 3 \quad r = -3$

$243 = ar^{n-1}$

$243 = 3(-3)^{n-1}$

$(-3)^{(n-1)} = 81$

$(n-1)\log(-3) = \log 81$

$n = \frac{\log 81}{\log(-3)} + 1 = 5$

$S_5 = \frac{-3\left(1 - (-3)^6\right]}{1 - -3}$

$= 546$

(b) $1 + \frac{1}{2} + \frac{1}{4} + \ldots \frac{1}{128}$

$\frac{1}{128} = 1\left(\frac{1}{2}\right)^{(n-1)}$

$(n-1)\log\left(\frac{1}{2}\right) = \log\left(\frac{1}{128}\right)$

$n = \frac{\log\left(\frac{1}{128}\right)}{\log\left(\frac{1}{2}\right)} + 1 = 8$

$S_8 = \frac{1\left[1 - \left(\frac{1}{2}\right)^9\right]}{\left(1 - \frac{1}{2}\right)} = 1.996$

4.

~~(a) $P = 2800$~~

~~$FV = PV(1+i)^n + [R((1+i)^n - 1]/i$~~

~~$i = r/m \quad n = mt$~~

4. $A = \frac{R((1+i)^n - 1)}{i}$

(a) $n = mt \quad i = r/m$

$R = 2800$

$A_1 = \frac{2800\left(\left(1+\frac{6}{100\times 12}\right)^{12} - 1\right)}{\frac{6}{100}}$

$= 34\,539.57$

$47,235.84$

(b) $A_2 = \frac{2100\left[\left(1+\frac{8}{100\times 2}\right)^{11\times 2} - 1\right]}{\frac{8}{100\times 2}}$

$= 71,920.74$

5. (a) $12000 = \frac{R\left[\left(1+\frac{1.9}{100\times 4}\right)^{7\times 4} - 1\right]}{\frac{1.9}{400}}$

$R = 401.72$

(b) $18600 = \frac{R\left[\left(1+\frac{0.94}{12\times 100}\right)^{5\times 12} - 1\right]}{\frac{0.94}{12\times 100}}$

$R = 302.89$

6. $8200 = \frac{R\left[\left(1+\frac{6.2}{100\times 2}\right)^{4\times 2} - 1\right]}{\frac{6.2}{200}}$

$R = 918.88$

7. $A = \frac{5900\left[\left(1+\frac{6.1}{100}\right)^{4} - 1\right]}{\frac{6.1}{100}}$

$= 25848.55$

$25,848.55$

8. $420 \times 12 \times 8$

$= 40320$

$40320 = \frac{R\left[\left(1+\frac{5.8}{100}\right)^{8\times 12} - 1\right]}{\frac{5.8}{100}}$

$R = 10.48$

9. $A = 750\left[\left(1+\frac{4.2}{100\times4}\right)^{4\times4}-1\right]$

$\frac{4.2}{400}$

$= 12992.93$

10. $310 \times 12 \times 3 = 11160$

$\$ 11160\left(1+\frac{8.1}{100}\right)^5$

$= 14097.47$

11. $A = 2600\left[\left(1+\frac{6.4}{100\times2}\right)^{2\times5}-1\right]$

$\frac{6.4}{200}$

$= 30082.09$

12 $35 \times 24 = 840 + 80$

$= 920$

$(5_p - 80)\left[1+\frac{17.2}{100}\right]^2 = 840$

$5_p = 691.54$