

(60) omittz #9

Answer Key - Adv. Math Assign.

[4]

1) a) $t_1 = 43, t_n = (t_{n-1}) + 7$
 $t_n = 36 + 7n$

b) $t_1 = 108, t_n = \frac{2}{3}(t_{n-1})$
 $t_n = 108(\frac{2}{3})^{n-1}$

[4]

2) a) -6, 12, 42, 84, 138, ...

b) 3, 6, 35, 1226, 1503079, ...

[8]

3) a) $t_{899} = -5278, S_{10} = 830$

b) $t_{18} = 786432$
 $S_{18} = 1572858$

[4]

4) a) $S_{250} = -466625$

b) $S_{12} = 1328600$

[8]

5) a) (n=19)

b) (n=501)

$S_{19} = -873815$

$S_{501} = 7915800$

[4]

6) 7, 21, ... a) linear

$t_7 = 91$
 $S_7 = 343$

b) geometric

$t_7 = 5103$
 $S_7 = 7651$

[6]

7) a) $\sum_{k=5}^{12} 2^k = 4080$

b) $\sum_{k=1}^6 \frac{5k}{k+1} = \frac{617}{28}$

[9]

8) a) $\sum_{n=1}^8 21 - 6n$

b) $\sum_{n=1}^5 \frac{1}{3}(3)^{n-1}$

c) $\sum_{n=1}^{97} 76 - 9n$

[4]

9) $t_1 = 3000$
 $t_2 \rightarrow$ (6 months)
 $t_3 \rightarrow$ (1 year)
 \vdots
 $t_{15} \rightarrow$ (15 yrs)

$I_{15} = 3000(1.08)^{15-1} = 3000(1.08)^{14}$
 $= \boxed{\$ 8811.58}$

[3]

10) a) $\boxed{28125}$ (3)

b) $\boxed{3352560}$ (3)

c) $\sum_{k=1}^{98} - \sum_{k=1}^{19} = \boxed{-992409}$ (7)

11) a) converges; $S_{\infty} = 16/3$
b) diverges; $S_{\infty} = \infty$

c) diverges
d) converges to 3
e) converges to 0