

HW109

1. geometric, $u_n = 3600(0.7)^{n-1}$

a) $u_{10} = 3600(0.7)^{10-1} = 145.27$

b) $S_{10} = \frac{3600(1-0.7^{10})}{1-0.7} = 11,661.03$

2. arithmetic, $u_n = 1.2n + 3.8$

$17 = 1.2n + 3.8$

$13.2 = 1.2n$

$11 = n$

} need to find n.

$S_{11} = \frac{11(5+17)}{2} = \boxed{121}$

3. $S_{15} = \frac{12.5(1-1.1^{15})}{1-1.1} = \boxed{381.27}$

4. $S_{50} = \frac{50(68.5-103)}{2} = \boxed{-862.5}$

$u_1 = 72 - 3.5(1) = 68.5$

$u_{50} = 72 - 3.5(50) = -103$

5. $S_{\infty} = \frac{5}{1-2/7} = \boxed{7}$

6. $S_{10} = \frac{4(1-3^{10})}{1-3} = \boxed{118,096}$

7. $92.58732 = \frac{u_1(1-1.1^6)}{1-1.1}$

$-9.258732 = u_1(1-1.1^6)$

$\boxed{12 = u_1}$

8. arithmetic, $u_n = -1.5n + 50.5$

$u_{15} = -1.5(15) + 50.5 = \boxed{28 \text{ min}}$

9. geometric, $u_n = 92000(1.04)^{n-1}$

$S_{\infty} = \frac{92000(1-1.04^{\infty})}{1-1.04} = 610233.74$

$\boxed{\$610,233.74}$

10. arithmetic, $u_n = -2n + 32$

$u_1 = 30$

$u_{12} = -2(12) + 32 = 8$

$S_{12} = \frac{12(30+8)}{2} = \boxed{228 \text{ cartons}}$

11. geometric, $u_n = 1.3(0.8)^{n-1}$

$S_{\infty} = \frac{1.3}{1-0.8} = \boxed{6.5 \text{ m}}$

BOOKWORK

1. $u_n = 4n - 1$

a) $u_{128} = 4(128) - 1 = 511$

b) $159 = 4n - 1$

$160 = 4n$

$40 = n$

c) $u_{20} = 4(20) - 1 = 79$

d) $S_{20} = \frac{20(3+79)}{2} = 820$

2. geometric $u_n = 100(0.84)^{n-1}$

a) 11th term, guess & check

b) $S_{10} = \frac{100(1-0.84^{10})}{1-0.84} = 13.2$

$$2c. \text{ } S_{20} = \frac{100(1-0.84^{20})}{1-0.84} = 605.9$$

$$d. S_{\infty} = \frac{100}{1-0.84} = 625$$

4. arithmetic, $u_n = -6.8n + 132.1$

$$a) u_{67} = -6.8(67) + 132.1 = -323.5$$

$$S_{67} = \frac{67(125.3 - 323.5)}{2} = \boxed{-6639.7}$$

$$b) \sum_{n=1}^{67} -6.8n + 132.1$$

5. geometric, $u_n = 12\left(\frac{2}{3}\right)^{n-1}$

$$a) S_7 = \frac{12(1-2/3^7)}{1-2/3} = \boxed{33.9ft}$$

$$b) S_{\infty} = \frac{12}{1-2/3} = \boxed{36ft}$$

extra problem

$$9 = \frac{5}{1-r}$$

$$9 - 9r = 5$$

$$-9r = -4$$

$$r = 4/9$$

$$\boxed{5, 20/9, 80/81, 320/729}$$

$$S_{\infty} = \frac{5(1-4/9^{\infty})}{1-4/9} = \boxed{8.931}$$