

# HW107

## BOOKWORK

2.  $u_n = 256(0.75)^{n-1}$

a) 34.17

b) 9<sup>th</sup> term

c)  $u_7 = 256(0.75)^6 = 45.56$

d)  $S_7 = \frac{256(1-0.75^7)}{1-0.75} = 887.3125$

7.  $u_n = 8\left(\frac{1}{2}\right)^{n-1}$

a)  $u_{10} = \frac{8(1-1/2^{10})}{1/2}$

$S_{10} = 15.98$

b)  $S_{20} = \frac{8(1-1/2^{20})}{1/2}$

$S_{20} = 15.99 \approx 16$

c)  $S_{30} = \frac{8(1-1/2^{30})}{1/2}$

$S_{30} = 16$  d) closer to  $\frac{8}{1/2} = 16$

3. a)  $S_5 = \frac{40(1-0.6^5)}{1-0.6} = 92.2$

b)  $S_{15} = \frac{40(1-0.6^{15})}{1-0.6} = 99.95$

c)  $S_{25} = \frac{40(1-0.6^{25})}{1-0.6} = 99.9997$

8. a)  $17,500(1.042)^{n-1}$   
 $17,500(1.042)^9 = \$25,342.39$

b)  $S_{10} = \frac{17500(1-1.042^{10})}{1-1.042}$

4. a)  $u_1 = 3.2$   
 c.d + 1.05  
 $S_5 = 26.5$

b)  $u_1 = 3.2$   
 c.r. = 1.5  
 $u_n = 3.2(1.5)^{n-1}$   
 $36.45 = 3.2(1.5)^{n-1}$   
 $n = 7$

\* remember change of base exponentials \*

$S_7 = \frac{3.2(1-1.5^7)}{1-1.5}$

$S_7 = 102.95$

4. c)  $S_{27} = \frac{27(5.7+70.7)}{2}$   
 $S_{27} = 1031.4$

d)  $S_{10} = \frac{3.2(1-4^{10})}{1-4}$   
 $S_{10} = 1,118,480$

5. a)  $S_{10} = \frac{3(1-2^{10})}{1-2}$   
 $S_{10} = 3069$

c)  $S_{15} = \frac{u_1(1-1.4^{15})}{1-1.4}$   
 $u_1 = 2.8$

$S_{10} = \$212,065.89$

10 a)  $1^2 + 2^2 + 3^2 + 4^2 + 5^2 + 6^2 + 7^2$

b)  $3^2 + 4^2 + 5^2 + 6^2 + 7^2$

Geometric Series - Answers

1. a. 0.049152    b. 0.12288    c. 312.41808

2. a.  $u_1 = 12.5$     b.  $r = 1.1$     c.  $S_{15} = 397.1560212$

3. 118.096

4. 12

5. a. 121    b. -862.5

1. the equation is  $u_n = 187.5(0.4)^{n-1}$

$$4. 92.58732 = \frac{u_1(1-1.1^4)}{1-1.1}$$

$$\frac{-9.258732}{1-1.1^4} = \frac{u_1(1-1.1^4)}{1-1.1^4}$$

$$\boxed{12 = u_1}$$

5. you are going to use the equation from the 3/22 notes