Name:_____ Date:_____

Pre-Calculus 11: HW 1.4 Geometric Series $S_n = \dfrac{a\left(1-r^n\right)}{1-r}$

1. Given each geometric sequence, indicate the values of the first term "a", number of terms "n", and common ratio "r"

a) $36+18+9+4.5+2.25+1.125$ $a=$ ____ $r=$ ____ $n=$ ____	b) $1+2+4+8+16+32+64+128$ $a=$ ____ $r=$ ____ $n=$ ____
c) $-5+10+(-20)+40+(-80)+\ldots\ldots+t_{11}$ $a=$ ____ $r=$ ____ $n=$ ____	d) $0.125+0.25+0.5+1+2+4+8+16+32$ $a=$ ____ $r=$ ____ $n=$ ____
e) $4+(-4)+4+(-4)+4+(-4)+4+(-4)$ $a=$ ____ $r=$ ____ $n=$ ____	f) $\frac{5}{4}+\frac{5}{2}+5+\ldots+40$ $a=$ ____ $r=$ ____ $n=$ ____
g) $\frac{2}{3}+2+6+18+\ldots.+486$ $a=$ ____ $r=$ ____ $n=$ ____	h) $\frac{27}{16}+\frac{9}{4}+3+\ldots\ldots+\frac{64}{9}$ $a=$ ____ $r=$ ____ $n=$ ____

2. Given each of the following series, find the sum

a) $2.5+5+10+20+40+\ldots.+t_8$	b) $8+12+18+27+40.5+\ldots..t_9$

c) $0.25 + \ 0.50 + \ 1.0 + \ 2.0 + \ 4.0 + \ldots + t_{10}$	d) $\frac{2}{3} + \ \frac{-1}{3} + \ \frac{1}{6} + \ \frac{-1}{12} + \ \frac{1}{24} + \ldots. \ t_7$
e) $4 + 8 + \ 16 + \ 32 + 64 \ldots\ldots + 2048$	f) $3 + 9 + 27 + 81 + 243 + \ldots. + 19683$
g) $24 + 12 + 6 + 3 + \ldots\ldots. + \frac{3}{16}$	h) $\frac{64}{27} + \frac{32}{9} + \frac{16}{3} + 8 + \ldots\ldots + 41.5$
i) $a = 3.5, r = 0.5, n = 10, S_{10} = ?$	j) $a = -4, r = -2, n = 6, S_6 = ?$

k) $a=\frac{27}{32},\ r=\frac{2}{3},\ n=8, S_8=?$	L) $a=125, r=0.2, n=7, S_7=?$

3. Given each geometric series, find the value of the missing term:

a) $S_6=341.25, r=\frac{1}{4}, a=?$	b) $S_6=567, r=\frac{1}{2}, a=?$
c) The sum of the first 8 terms of a geometric series is 1020 with $r=-2$. Determine the first term.	d) $S_5=100, S_4=87, t_5=?$

4. The sum of the 1st and 2nd term of a geometric sequence is 4 and the sum of the 3rd and 4th term is 36. Determine the sum of the first 8 terms.

5. Challenge: In a geometric series, $S_7 = 381$ and $S_6 = 189$, what is the value of the common ratio? Please show all your work: