11-3 Summations

Name: _____ Time› Start: _____ Finish: _____ Total Time = _____

Arithmetic: $S_n = \frac{n}{2}[2a_1 + (n-1)d]$ Geometric: $S_n = \frac{a_1(1-r^n)}{1-r}$ $S_\infty = \frac{a_1}{1-r}, \ |r| < 1$

Calculate the following summations.

_____ 1. $\sum_{n=1}^{4} 2n-1$ _____ 2. $\sum_{n=-2}^{1} -3n$ _____ 3. $\sum_{n=3}^{5} n^{n-2}$

Find the sum of the first 20 terms of the arithmetic sequences below.

_____ 4. 2, 5, 8, 11, 14, . . .

_____ 5. 1, 11, 21, 31, 41, . . .

_____ 6. -22, - 20, -18, -16, -14, . . .

_____ 7. 4, 4.5, 5, 5.5, 6, . . .

Determine the sum of the infinite geometric series below.

_____ 8. 80 + 40 + 20 + 10 + . . .

_____ 9. 162 + 54 + 18 + 6 + . . .

_____ 10. $5+1+\frac{1}{5}+\frac{1}{25}+...$

_____ 11. $9-6+4-\frac{8}{3}+...$

Determine the sum of the finite geometric series below. Find the sum of the first **12** terms.

_____ 12. 1 + 6 + 36 + 216 + …

_____ 13. 2 + 3 + 4.5 + 6.75 + …

_____ 14. 9 – 18 + 36 – 72 ...

_____ 15. 3 – 6 + 12 – 24 + …