

Number and show all work on a separate sheet of paper. NO WORK, NO CREDIT!!!
Write your answers in the column to the right.

EQUATION BANK

$$\sum_{k=0}^n \frac{n!}{(n-k)!k!} a^{n-k} b^k$$

$$a_n = a_1 + (n-1)d$$

$$S_n = \frac{n}{2}(a_1 + a_n)$$

$$S = \frac{a_1}{1-r}$$

$$S_n = \frac{n}{2}[2a_1 + (n-1)d]$$

$$S_n = \frac{a_1 - a_n r}{1-r}$$

$$a_n = a_1 r^{n-1}$$

$$S_n = \frac{a_1(1-r^n)}{1-r}$$

1. Find the 22nd term of the arithmetic sequence in which $a_1 = -5$ and $d = 7$. **1. 142**
2. Write an equation for the n th term of the arithmetic sequence 18, 11, 4, -3, ... **2. $a_n = -7n + 25$**
3. Find the three arithmetic means between 56 and 28. **3. 49, 42, 35**
4. Find S_n for the arithmetic series in which $a_1 = 10$, $d = -6$, and $a_n = -50$ **4. -220**
5. Evaluate $\sum_{n=2}^{13} (3n + 1)$. **5. 282**
6. Find the fifth term of the geometric sequence for which $a_1 = 243$ and $r = -1/3$. **6. 3**
7. Find the equation for the n th term of the geometric sequence 36, 12, 4, ... **7. $a_n = 36(1/3)^{n-1}$**
8. Find four geometric means between 3 and 96. **8. 6, 12, 24, 48**
9. Find the sum of the first 6 terms of the geometric series $4 - 2 + 1 - \dots$ **9. 21/8**
10. Find a_1 in a geometric series for which $S_n = -364$, $r = -3$, and $n = 6$. **10. 2**
11. Evaluate $\sum_{n=1}^5 \left(-\frac{1}{2}\right)^{n-1}$. **11. 11/16**
12. Find the sum of the infinite series $1/8 - 3/16 + 9/32 - 27/64 + \dots$, if it exists. **12. does not exist**
13. Evaluate $\sum_{n=1}^{\infty} -2\left(-\frac{5}{8}\right)^{n-1}$. **13. -16/13**
14. Write $0.\overline{36}$ as a fraction. **14. 4/11**
15. Expand $(3r + s)^5$. **15. $243r^5 + 405r^4s + 270r^3s^2 + 90r^2s^3 + 15rs^4 + s^5$**
16. Find the fourth term in the expansion of $(x + 2y)^6$. **16. $160x^3y^3$**