

1. SHOW ALL WORK w/ALL reasoning. Solve $3^{2x+1} = 5$

2. SHOW ALL WORK w/ALL reasoning.

Given the list....

3, 6, 11, 18, 27, 38, ...

Determine the closed and the recursive forms of the sequence.

3. SHOW ALL WORK w/ALL reasoning. Solve $2 \cdot 3^{5x+1} = 7 \cdot 9^{x-1}$

4. SHOW ALL WORK w/ALL reasoning. Solve $\log_2 x = \log_2 3 + \log_2(x - 2)$

5. SHOW ALL WORK w/ALL reasoning. Compute the following finite series: $\sum_{n=1}^{20} [3n^2 + 4n + 2]$

6. **SHOW ALL WORK w/ALL reasoning.** Prove the following statement:

$$\sum_{n=1}^k n^2 = \frac{k(k+1)(2k+1)}{6}$$

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7. **SHOW ALL WORK w/ALL reasoning.** Prove the *log of the quotient is the difference of the logs* theorem.

for real numbers $a, b > 0$,

$$\log\left(\frac{a}{b}\right) = \log a - \log b$$