

1.) Evaluate the following sums.

a.) $\sum_{i=1}^n 9$ b.) $\sum_{i=1}^{1053} 9$ c.) $\sum_{i=34}^{867} 9$ d.) $\sum_{i=1}^n i(2i + 3)$ e.) $\sum_{i=1}^{60} (5i - i^2)$

f.) $\sum_{i=26}^{62} (5i - i^2)$ g.) $\sum_{i=1}^n (\ln(i + 2) - \ln(i + 1))$ h.) $\sum_{i=1}^4 \cos \pi i$ i.) $\sum_{i=1}^{17} \cos \pi i$

j.) $\sum_{i=1}^n \cos \pi i$

2.) Prove that $\sum_{i=1}^n i^2 = \frac{n(n+1)(2n+1)}{6}$.

3.) The density at a point along a thin rod two feet long is given by $x^2 + 1$ (gm./ft.), where x is the distance (ft.) from the point to the left end of the rod. Use four equal subdivisions and midpoints (sampling points) to estimate the total mass of the rod.

4.) a.) Sketch the graph of $y = x^3$ on the interval $[0, 1]$.

b.) Estimate the area of the region below the graph of $y = x^3$ and above $[0, 1]$ using rectangles above three equal subdivisions and

- i.) left endpoints of the subdivisions.
- ii.) right endpoints of the subdivisions.
- iii.) midpoints of the subdivisions.

THE FOLLOWING PROBLEM IS FOR RECREATIONAL PURPOSES ONLY.

5.) Write a formula for the n th term in the following sequence : 1, 3, 1, 3, 1, 3, 1, 3, ...