

Show all work. 10 points.

1) Find the sum of $2^3 + 2^4 + 2^5 + \cdots + 2^{81}$ using $\frac{a(1 - r^n)}{1 - r} = \sum_{j=0}^{n-1} ar^j$. You can leave answer as fraction with powers of 2 in it.

2) Find the second degree Taylor polynomial at $a = 0$ of the function $f(x) = \ln(1 + 2 * x)$.