AP Calculus BC

6'.2 Homework

1. Let *f* be a function that has derivatives of all orders for all real numbers.
   Assume that $f(0)=5,\ f'(0)=-3,\ f''(0)=8,$ and $f'''(0)=24.$
   Write the third order Taylor polynomial for *f* at *x = 0* and use it to approximate $f(0.4).$

2. Find the interval of convergence for $\sum_{n=0}^{\infty}\frac{(4x-3)^{3n}}{8^n}.$

3. Determine if $\sum_{n=1}^{\infty} \frac{1}{3^n + 2}$ converges. Show your work.

4. Determine if the series converges absolutely, conditionally, or diverges.

$$\sum_{n=1}^{\infty} \frac{(-1)^n}{n^3 - \ln n}.$$