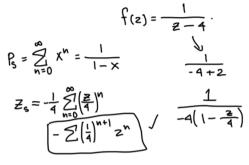
Q1: Find a power series representation for the function



 $(D_3: \text{ Find a power series representation for the function}$ $f(x) = \frac{1}{6-x^3}$ $f(x) = \frac{1}{6(1-\frac{x^3}{6})}$ $X_3 = \frac{1}{6} \sum_{n=0}^{\infty} \left(\frac{x^3}{6}\right)^n \\ = \frac{1}{6} \sum_{n=0}^{\infty} \frac{x^{3n}}{(n+1)}$ Qq: Find a power series representation for

$$\frac{4 + 3x}{1 + x}$$

$$\frac{4}{1 + x} + \frac{3x}{1 + x}$$

$$\frac{1}{1 - (-x)} + 3x \frac{1}{1 - (-x)}$$

$$4 \sum_{n=0}^{\infty} (-1)^{n} x^{n} + 3x \sum_{n=0}^{\infty} (-x)^{n}$$

$$4 \sum_{n=0}^{\infty} (-1)^{n} x^{n} + 3x \sum_{n=0}^{\infty} (-1)^{n} x^{n}$$

$$+ 3 \sum_{n=0}^{\infty} (-1)^{n} x^{n+1}$$

Referenced ChatGPT for this question

$$f(+) = \int_{0}^{+} \frac{s}{1-s^{4}} \rightarrow \int_{0}^{+} s \frac{1}{1-s^{4}}$$

$$\int_{0}^{+} \frac{1}{s} \frac{1}{s} \frac{4n+2}{s} \int_{0}^{+} s \frac{1}{s} \frac{1}{s^{2}} \frac{1}{s$$

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