

- (1) Find the radius of convergence R and open interval of convergence $\mathcal{I}$ for the power series

$$\sum_{k=1}^{\infty} \frac{(-1)^k 3^{2k} (x-2)^k}{3k}$$

(2) Use an area interpretation to find $\int_{-3}^0 (1 + \sqrt{9 - x^2}) \, dx$

[4]

(3) Evaluate $\int_1^2 \left(\frac{x}{2} - \frac{2}{x} \right) \, dx$

[4]