

1. In each of the following if the series converges, then write the exact value of its sum in a form as simplified as possible in the box; otherwise, write Div. No explanation is required.

a. $\sum_{n=0}^{\infty} \frac{3^n}{n!} = e^3$

b. $\sum_{n=0}^{\infty} (-1)^n \frac{3^n}{2n+1} = \text{Div}$

d. $\sum_{n=0}^{\infty} (-1)^n \frac{\pi^{2n}}{(2n+1)!} = 0$

c. $\sum_{n=1}^{\infty} (-1)^n \frac{n}{3^n} = -\frac{3}{16}$

e. $\sum_{n=1}^{\infty} \frac{1}{3^{n^2}} = \ln\left(\frac{3}{2}\right)$