

Problem Set #22

Due: Thursday, 22 March 2012

Determine which of the following series converge and which diverge.

1. $\sum_{k=1}^{\infty} \frac{2^k}{k!}$
2. $\sum_{n=0}^{\infty} \frac{(-1)^{n+1}}{\sqrt{3n-1}}$
3. $\sum_{m=1}^{\infty} \frac{m^2 m!}{(2m)!}$
4. $\sum_{i=0}^{\infty} \frac{3^i + i}{i! + 2}$
5. $\sum_{j=1}^{\infty} \frac{\sin(j\theta)}{j^2}$
6. $\sum_{\ell=0}^{\infty} \frac{(-1)^\ell \ell^2}{4 + \ell^2}$