Does the series converge or diverge?
If it converges, how closely does S_{100} approximate the value of the series?

1. $\displaystyle\sum_{k=1}^{\infty}(-1)^{k+1}\frac{1}{2^k+k}$

Does the series converge or diverge?
If it converges, how closely does S_{100} approximate the value of the series?

2. $\displaystyle\sum_{j=5}^{\infty}(-1)^j\frac{j!}{(j+2)!}$

Does the series converge or diverge?
If it converges, how closely does S_{100} approximate the value of the series?

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

Does the series converge or diverge?
If it converges, how closely does S_{100} approximate the value of the series?

4. $\displaystyle\sum_{k=2}^{\infty} \frac{k!}{k! - 3}$

Does the series converge or diverge?
If it converges, how closely does S_{100} approximate the value of the series?

5. $\sum_{k=1}^{\infty}(-1)^{k+1}\sin(k)$

Does the series converge or diverge?
If it converges, how closely does S_{100} approximate the value of the series?

6. $\displaystyle\sum_{k=2}^{\infty}(-1)^k \sin\left(\frac{\pi}{k}\right)$

Does the series converge or diverge?
If it converges, how closely does S_{100} approximate the value of the series?

7. $\displaystyle\sum_{k=3}^{\infty}(-1)^{k+1}\cos\left(\frac{\pi}{k}\right)$

Does the series converge or diverge?
If it converges, how closely does S_{100} approximate the value of the series?

8. $\displaystyle\sum_{k=1}^{\infty} \frac{1}{k^2+1}$