Determine whether each series converges absolutely, converges conditionally, or diverges. Be sure to check the hypotheses of any tests you use.

1. $\displaystyle\sum_{n=0}^{\infty} \frac{(-5)^n}{n!}$
2. $\displaystyle\sum_{n=1}^{\infty} \frac{(-2)^n}{n^2}$
3. $\displaystyle\sum_{n=1}^{\infty} \frac{(-1)^{n-1}}{\sqrt{n}}$
4. $\displaystyle\sum_{n=2}^{\infty} (-1)^n \frac{\arctan(n)}{n^2}$
5. $\displaystyle\sum_{n=0}^{\infty} \frac{(-2)^n n!}{(2n)!}$
6. $\displaystyle\sum_{n=2}^{\infty} \frac{(-1)^{n+1}}{3n^4}$
7. $\displaystyle\sum_{n=1}^{\infty} a_n$ where $\{a_n\}$ is the sequence defined recursively by $a_1 = 2$ and $a_{n+1} = \left(\frac{5n+1}{4n+3}\right) a_n$
8. $\displaystyle\sum_{n=0}^{\infty} \frac{3^{2n+1}}{(2n+1)!}$