Determine whether the following series converge or diverge. If it converges, does it converge absolutely or conditionally? If possible, find the sum.

(1) $\displaystyle\sum_{n=1}^{\infty} \frac{n^2+1}{n^5 - n^2\sqrt{3}}$

The series ________________________ by the ____________________________________.

(2) $\displaystyle\sum_{n=1}^{\infty} \frac{n^2-1}{n^3+100}$

The series ________________________ by the ____________________________________.

(3) $\displaystyle\sum_{n=1}^{\infty} \left(\frac{n^2}{n^2+1}\right)^n$

The series ________________________ by the ____________________________________.

(4) $\displaystyle\sum_{n=1}^{\infty} \frac{\cos(2n)}{n^2+1}$

The series ______________________ by the __________________________________.

(5) $\displaystyle\sum_{n=4}^{\infty} \frac{\ln(n)}{n^3}$

The series ______________________ by the __________________________________.

(6) $\displaystyle\sum_{n=1}^{\infty} \left[\frac{5n}{n+3} - \frac{5(n+1)}{n+4}\right]$

The series ______________________ by the __________________________________.

(7) $\displaystyle\sum_{n=1}^{\infty} \frac{\sin(n^2)}{n^2}$

The series __________________________ by the _______________________________________.

(8) $\displaystyle\sum_{n=1}^{\infty} \frac{n^n}{(n^2+1)^n}$

The series __________________________ by the _______________________________________.

(9) $\displaystyle\sum_{n=1}^{\infty} \frac{(n!)^n}{n^{2n}}$

The series __________________________ by the _______________________________________.

(10) $\displaystyle\sum_{n=1}^{\infty} \left(\frac{2^{n+1}}{2^n+1}\right)^n$

The series ____________________________ by the ____.

(11) $\displaystyle\sum_{n=0}^{\infty} \frac{3+2^n}{\pi^{n+1}}$

The series ____________________________ by the ____.

(12) $\displaystyle\sum_{n=3}^{\infty} \left[\frac{\ln(n+1)}{n+2} - \frac{\ln(n+2)}{n+3}\right]$

The series ____________________________ by the ____.

(13) $\displaystyle\sum_{n=1}^{\infty} \frac{2^{n+1}}{3(n!)}$

The series ________________________ by the ____________________________________.

(14) $\displaystyle\sum_{n=1}^{\infty} \frac{2^{2n}}{3 \cdot 5^{n-1}}$

The series ________________________ by the ____________________________________.

(15) $\displaystyle\sum_{n=1}^{\infty} \left(1 + \frac{1}{n}\right)^{n}$

The series ________________________ by the ____________________________________.

(16) $\sum_{n=1}^{\infty} \frac{(-1)^{n-1}}{n^2}$

The series ______________________________ by the ____.

(17) $\sum_{n=1}^{\infty} \frac{(-1)^{n}}{\sqrt{n+1}}$

The series ______________________________ by the ____.

(18) $\sum_{n=1}^{\infty} \frac{(n+1)!}{n^2 e^n}$

The series ______________________________ by the ____.