Review of Sections 9. 1 – 9.6	Name:
Sequences and Series	Date:

Determine if the following sequences converge or diverge. If it converges, find its limit.

$$\begin{array}{c|c} a_n = \frac{n^2 - 3}{2 + 2n^2} & a_n = \frac{\sin(n)}{\ln(n+1)} & a_n = \frac{2^n}{3^{n-2}} \\ a_n = \sin[\left(\frac{n}{2}\right)\pi] & a_n = n^{1/n} \end{array}$$

Find the sum of the following geometric series

$\sum_{k=0}^{\infty} \left(\frac{1}{2}\right)^k \qquad 1 - (4/9) + (16/81) - (64/729) + \cdots \qquad \pi + e + (e^2/\pi) + (e^3/\pi^2)^{-1}$) + …
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Determine if the following converge or diverge

$\sum_{n=1}^{\infty} \frac{1}{n+3^n}$	$\sum_{n=1}^{\infty} \frac{(-2)^{2n}}{n^n}$	$\sum_{n=1}^{\infty} \frac{\sqrt{n^2 - 1}}{n^3 + 2n^2 + 5}$
$\sum_{n=1}^{\infty} (-1)^n \frac{n}{n+2}$	$\sum_{n=1}^{\infty} \tan(1/n)$	$\sum_{n=1}^{\infty} \frac{n^2 2^{n-1}}{(-5)^n}$
$\sum_{k=3}^{\infty} \left[(\ln k) / k \right]^k$	$\sum_{n=1}^{\infty} \frac{n^2 + 1}{5^n}$	$\sum_{n=2}^{\infty} \frac{1}{n\sqrt{\ln n}}$
$\sum_{n=1}^{\infty} \frac{(2^k)^k}{(k^2)^k}$ $\sum_{n=1}^{\infty} \frac{3^n n^2}{n!}$	$\sum_{n=2}^{\infty} \frac{(-1)^{n+1}}{n \ln n}$	$\sum_{k=1}^{\infty} k^2 e^{-k}$
$\sum_{n=1}^{\infty} \frac{3^n n^2}{n!}$	$\sum_{k=1}^{\infty} \frac{5^k}{3^k + 4^k}$	$\sum_{n=1}^{\infty} (-1)^n 2^{1/n}$
$\sum 3(3/4)^n$	$\sum 2\sqrt[3]{n^{-5}}$	$\sum \frac{n}{\ln(n+1)}$
$\sum \frac{(n+2)!}{2^n(n!)}$	$\sum \frac{n}{2n+1}$	$\sum_{n=1}^{\infty} \frac{1}{n(n+1)}$
$\sum_{n=1}^{\infty} \frac{n+1}{n!}$	$\sum_{n=1}^{\infty} \frac{\ln n}{2^n}$	$\sum_{n=1}^{\infty} \frac{e^{\pi/2}}{\pi^n}$

Determine if the following diverges, converges absolutely, or converges conditionally

$\sum_{k=1}^{\infty} (-1)^k / \sqrt{k}$	$\sum_{k=3}^{\infty} (\ln k)/(-3)^k$	$\sum_{k=1}^{\infty} (-2)^k / k^2$	
$\sum_{k=0}^{\infty} (-1)^k k^3 / e^{k^4}$	$\sum_{k=1}^{\infty} (-2)^k / k!$	$\sum_{k=3}^{\infty} (-1)^k / (k \ln^2 k)$	

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