Worksheet 11.7a Supplement for Extra Practice

Limits And Convergence Practice Problems

Legend:
C   Convergent
AC Absolutely Convergent
CC Conditionally Convergent
D   Divergent

Fill out the following chart. For all limits, specify ∞, - ∞, or DNE (does not exist) where appropriate.

a_n	$\lim\limits_{n \to \infty} a_n$	$\{a_n\}$ C or D	$\lim\limits_{n \to \infty}\left[(-1)^n a_n\right]$	$\{(-1)^n a_n\}$ C or D	$\sum a_n$ AC, CC, or D	$\sum (-1)^n a_n$ AC, CC, or D
$\dfrac{2n}{n+2}$	2	C	DNE	D	D	D
$\dfrac{3^n}{n^2}$	∞	D	DNE	D	D	D
$\left(\dfrac{2n+8}{n^2}\right)^n$	0	C	0	C	AC	AC
$\dfrac{n}{n^2+3}$	0	C	0	C	D	CC
$\dfrac{n!}{100^n}$	∞	D	DNE	D	D	D
$\dfrac{1}{1+\ln n}$	0	C	0	C	D	CC
$5\left(\dfrac{3}{4}\right)^n$	0	C	0	C	AC	AC
$\dfrac{10^n}{n!}$	0	C	0	C	AC	AC