Problem 8

Textbook section 11.4: Problem number 'Misc'

Pair the conclusion "C" (converges) or "D" (diverges) with the FIRST test or reason below which gives this conclusion. For example, your answer is DP if the series is a divergent p-series (it is not a geometric series and the n-th term test could not be used to confirm divergence).

N = The n-th term test
G = It's a geometric series
P = It's a p-series, \( \sum \frac{1}{n^p} \)
C = Direct or Limit Comparison Test, compared to a multiple of a geometric or p-series
I = Integral Test
Z = None of the above

\[ \sum_{n=2}^{\infty} \frac{1}{4n \ln n} \] 
\[ \sum_{n=1}^{\infty} \frac{n+1}{7n} \] 
\[ \sum_{n=1}^{\infty} \frac{5}{n \sqrt{n^2+1}} \] 
\[ \sum_{n=1}^{\infty} \frac{1}{\sqrt{n} \sqrt{n+5}} \] 
\[ \sum_{n=1}^{\infty} \tan \left( \frac{1}{n} \right) \] 
\[ \sum_{n=1}^{\infty} \frac{n+4^n}{n^2 4^n} \] 
\[ \sum_{n=1}^{\infty} \frac{n^3}{n(n+4)} \] 
\[ \sum_{n=2}^{\infty} \frac{1}{n^{3/4} - 1} \]

Note: To get full credit, all answers must be correct. Having all but one correct is worth 70%. All but two correct is worth 40%. Three or more incorrect answers gives a score of 0%.