For each of the series listed below, apply **all 7** of the following tests, automating the steps using Maple:

- n^{th} term test
- integral test
- comparison test
- limit comparison test
- alternating series test
- ratio test
- root test

To apply a test to a series, the series must satisfy the conditions of the test (for example, we cannot apply the alternating series test to a series whose terms are all positive). Be sure to make clear in your write-up which test you are applying to which series.

(a) $\displaystyle\sum_{n=2}^{\infty} \frac{1}{n(\ln n)^2}$

(b) $\displaystyle\sum_{n=0}^{\infty} \frac{(-e)^n}{n!}$

(c) $\displaystyle\sum_{n=0}^{\infty} \frac{\sqrt{n}}{1+n^2}$

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

Tips. • For full credit, every test on every series requires a brief written explanation of the result. Use `ctrl-t` to insert text.
• If a series doesn't satisfy the conditions for a test, say which condition is violated and move on.
• For the comparison or limit comparison test, choose a similar but simpler series whose convergence you know. If the test is inconclusive, say why and move on.
• If the ratio or root test is inconclusive, say why and move on.
• If Maple fails to evaluate a limit or integral, then you may state that the test is inconclusive (assuming you have implemented it correctly).

Useful Maple commands for this assignment: `limit`, `sum`, `int`, `evalf`