

SERIES PRACTICE HINTS

For each problem in my 2005 series worksheet I've listed the test or tests which can most easily be used to determine the series' convergence or divergence. Here are the abbreviations: **DCT** = Comparison Test (Direct), **LCT** = Limit Comparison Test, **I** = Integral Test, **AST** = Alternating Series Test, **ND** = (nth term) Test for Divergence, **G** = geometric series, **T** = telescoping series. If the test you used isn't listed then that means that either you used it in an unanticipated way or you've made a mistake. **Note:** Most of the DCT problems can also be done using the Integral Test followed by the DCT for integrals, though I haven't listed that solution. Similarly, I've omitted listing p-series or geometric series when these are used in conjunction with either the DCT or the LCT.

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| 1) p-series or I | 2) T (to find the sum)
I or LCT (C/D only) | 3) G |
| 4) ND | 5) AST | 6) LCT |
| 7) DCT | 8) I | 9) DCT or LCT |
| 10) LCT | 11) DCT | 12) AST |
| 13) ND | 14) T | 15) LCT or I |
| 16) ND or LCT (or I) | 17) G (to find the sum)
AST (C/D only) | 18) LCT |
| 19) DCT or DCT+I | 20) AST | 21) I |
| 22) LCT | 23) DCT | 24) ND or DCT+ND |
| 25) G or ND | 26) LCT | 27) AST* |
| 28) DCT | 29) ND | 30) T |

*This one is actually the negative of the alternating harmonic series, so if you show that fact then you need not use the AST explicitly.