Here is a list of topics that can appear on Exam 3.

- **11.2:** Know how to find the exact sum of a convergent telescoping series.
- **11.3:** Know how to use the Integral Test to check whether a series is convergent or divergent. Remember that you are only allowed to use the Integral Test if the terms $x_n$ of your series are (i) decreasing and (ii) positive.
- **11.3:** Know that if a convergent series $\sum_{n=1}^{\infty} x_n$ satisfies the conditions (i) and (ii) above, then you can estimate its sum to within any desired amount by using the formula $\sum_{n=N+1}^{\infty} x_n \leq \int_{N}^{\infty} x_n \, dx$.
- **11.4:** Know how to use the Comparison and Limit Comparison Tests to check whether a series is convergent or divergent. Remember that you are only allowed to use these tests if the terms $x_n$ of your series are positive. Know that your main candidates for comparison series are ones where you immediately know convergence/divergence already: geometric series (which converge if $-1 < r < 1$ and diverge otherwise) and $p$-series (which converge if $p > 1$ and diverge otherwise)
- **11.5:** Know how to use the Alternating Series Test to check whether a series is convergent or divergent. Remember that you are only allowed to use the Alternating Series Test if your series can be written as $\sum_{n=1}^{\infty} (-1)^n x_n$ or $\sum_{n=1}^{\infty} (-1)^{n+1} x_n$ where $x_n$ (i) is decreasing, (ii) is positive, and (iii) approaches 0.
- **11.5:** Know that you can estimate the sum of an alternating series to within any desired amount by using the formula $\sum_{n=N+1}^{\infty} (-1)^n x_n \leq |x_{N+1}|$. 