SECTION 5.3: INTEGRAL TEST AND p-SERIES

1. The Integral Test:

2. All questions below refer to the series $\displaystyle\sum_{n=1}^{\infty} \frac{3n}{10+n^2}$

   (a) What does the Divergence Test tell us about this series?

   (b) Show that we can apply the Integral Test to the series.

   (c) Use the Integral Test to determine whether or not the series converges.

3. A **p-series** has the form:

4. Convergence: A p-series converges when _____ ← *give a condition on p*
   and diverges when _____ ← *give a condition on p*

5. Use what we know about p-series and convergence to determine whether the series below converge or diverge.

   (a) $\displaystyle\sum_{n=1}^{\infty} \frac{1}{n^{1.56}}$

   (b) $\displaystyle\sum_{n=1}^{\infty} \frac{1}{n^{99/100}}$

6. Use the integral test or divergence test to determine whether the series converge:

   (a) $\displaystyle\sum_{n=1}^{\infty} \frac{n}{3^n}$

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

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