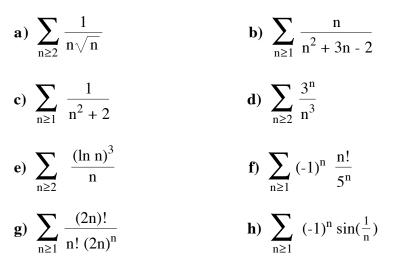
Math 112

- 1. Find the sum of $\sum_{n\geq 2} \frac{2^n}{3^{n+1}}$.
- **2.** For each of the following, tell whether the series converges or diverges. Explain all answers.



3. Find the interval of convergence for $\sum_{n\geq 0} \frac{3^n}{5^{2n}} x^{3n}$.

- 4. We could use L'Hopital's Rule to calculate $\lim_{x\to 0} \frac{\sin x (x \frac{x^3}{3!} + \frac{x^5}{5!})}{x^7}$. It is much easier however, if we replace $\sin x$ by it's Taylor series. Calculate the limit using the Taylor series substitution.
- **5.** a) Find the Taylor Series associated with $f(x) = e^x$ about $x_0=1$.
 - **b**) For what values of x does the series in **a**) converge (Explain your answer)?
- At the end of the test, fold this test paper and insert it at the end of your test booklet -.