Calculus II
Practice Problems 7

Find the limits.

1. $\lim_{n\to\infty} \frac{n}{(\ln n)^{15}}$

2. $\lim_{n\to\infty} \frac{n^k}{n!}$

3. $\lim_{n\to\infty} \left(\frac{n+1}{n}\right)^2$

4. $\lim_{n\to\infty} \frac{(2n-1)^2}{n^2-3n+1}$

5. $\lim_{n\to\infty} \frac{(1+n)^n}{n!}$

6. $\lim_{n\to\infty} n^{1/n}$

Does the series converge? If it does, try to find the sum.

7. $\sum_{n=1}^{\infty} \frac{5^n}{8^{n+1}}$

8. $\sum_{n=1}^{\infty} \frac{5^n}{8^n+1}$

9. $\sum_{k=1}^{\infty} \frac{1}{(2k)(2k+2)}$

10. $\sum_{n=1}^{\infty} \frac{n}{2^n}$