MATH 2300-015 QUIZ 7   Name: _____

Determine whether the following series converge or diverge (circle your answer). Indicate your reasoning (divergence test, integral test, direct or limit comparison test, etc.).

1. $\displaystyle\sum_{j=1}^{\infty} 4^{1/j}$ [converges]   [diverges]

2. $\displaystyle\sum_{k=0}^{\infty} \frac{4^k}{5^k - k^2}$ [converges]   [diverges]

3. $\displaystyle\sum_{l=2}^{\infty} \frac{l}{\sqrt{l^3 - l}}$ [converges]   [diverges]

4. $\displaystyle\sum_{n=0}^{\infty} \left(\frac{2n}{3n + 5}\right)^n$ [converges]   [diverges]

5. $\displaystyle\sum_{m=0}^{\infty} \cos(e^{-m})$ [converges] [diverges]

6. $\displaystyle\sum_{j=1}^{\infty} \frac{1}{j^{1+\sqrt{j}}}$ [converges] [diverges]

7. $\displaystyle\sum_{\nu=1}^{\infty} \frac{2 + \sin \nu}{\sqrt{\nu}}$ [converges] [diverges]

8. $\displaystyle\sum_{n=0}^{\infty} ne^{-n^2}$ [converges]   [diverges]

9. $\displaystyle\sum_{k=1}^{\infty} \frac{\ln k}{k^2}$ [converges]   [diverges]

    [Hint(s): Use the integral test or the fact that $\displaystyle\lim_{x\to\infty} \frac{\ln x}{x^p} = 0$ for all $p > 0$.]

10. $\displaystyle\sum_{m=1}^{\infty} \sin(1/m)$ [converges]   [diverges]   [Hint: $\displaystyle\lim_{x\to 0} \frac{\sin x}{x} = 1$.]