Each problem is worth 5 points. For full credit provide complete justification for your answers.

1. Determine whether the series  $\sum_{n=1}^{\infty} \frac{3}{2+5^n}$  converges or diverges.

2. Determine whether the series  $\sum_{n=0}^{\infty} 4\left(\frac{-3}{2}\right)^n$  converges or diverges.

3. Determine whether the series  $\sum_{n=1}^{\infty} \frac{n+3}{n^2}$  converges or diverges.