Math 1B, Quiz 6 Section 203 GSI Carter

Name:

1. (3pts) Use the **Comparison Test** or **Limit Comparison Test** to determine whether the series converges or diverges. Verify your answer.

$$\sum_{n=1}^{\infty} \frac{\sin\left(\frac{1}{n}\right)}{n}$$

2. (3pts) Is the series

$$\sum_{n=2}^{\infty} \frac{(-1)^n}{\sqrt[3]{n}\ln n}$$

convergent or divergent? Justify your answer.

3. (4pts) Determine whether the statement true or false. If false give a counterexample.

(a) (2pts) The series $\sum_{n=1}^{\infty} a_n$ is converegnt then $\sum_{n=1}^{\infty} (-1)^n a_n$ is convergent.

(b) (2pts) The series $\sum_{n=1}^{\infty} a_n$ is convergent then the series $\sum_{n=1}^{\infty} a_n^2$ is convergent.