The 6th Quiz of Calculus 0507

學號：_____ 姓名: _____

1. (60%)

(1). $\int_1^\infty \frac{1}{x} dx$　　(2). $\int_{-\infty}^\infty \frac{e^x}{1+e^{2x}} dx$　　(3). $\int_0^\infty e^{-x}\sin(2x)dx$　　(4). $\int_{-1}^1 \frac{1}{x^2} dx$

2. (40%) True or False ? If it is true, explain why. If it is false, give a counterexample.

(1). If f is continuous on $[1,\infty)$ and $\lim_{x\to\infty} f(x) = 0$, then $\int_1^\infty f(x)dx$ converges.

(2). If f is continuous on $[1,\infty)$ and $\int_1^\infty f(x)dx$ diverges, then $\lim_{x\to\infty} f(x) \neq 0$