

MATH141(0332/0342) Calculus II Fall 2009

Worksheet 8, Section 9.1-9.2

Name: _____

1. (4 points) You are not able to solve the following problem right now. But they are very interesting. See, math is beautiful.)

(1) $e^{ix} = \cos x + i \sin x$

(2) $\frac{\pi}{4} = 1 - \frac{1}{3} + \frac{1}{5} - \frac{1}{7} + \dots$

2. (3 points) Find the formula for an arbitrary Taylor polynomial of f .

$$f(x) = \ln \frac{1+x}{1-x}$$

3. (3 points) Approximate $\sqrt{2009}$.

4. (10 points) Evaluate the limit as a number, ∞ or $-\infty$.

(1) $\lim_{n \rightarrow \infty} \tan^{-1} n$

(2) $\lim_{n \rightarrow \infty} \sqrt[n]{5n}$

(3) $\lim_{n \rightarrow \infty} \int_{2+1/n}^{3-1/\sqrt{n}}$