

## 18.014 UNIT VI: TAYLOR'S FORMULA AND LIMITS

### Friday, Nov. 3.

*Lecture:* Taylor's formula; applications.

*Read:* 7.1, 7.2, and the statements of Theorems 2 and 3 on p. O.3 and p. O.5.

*Do:* O.10: 1, 3, 4, 5, 6; p. 285: 8, 9. (In 8b, use the fact that  $|r(x)| \leq x^5/5!$  to improve the estimate to  $2 \times 10^{-5}$ .)

### Tuesday, Nov. 7.

*Lecture:* Proof of Taylor's formula.

*Read:* Notes O.

*Do:* p. O.12: 9, 10; p. 291: 8, 10, 13, 14, 15, 16, 28 (using Taylor's formula).

### Thursday, Nov. 9.

*Lecture:* L'Hopital's rule; the symbols  $+\infty$  and  $-\infty$ ; infinite limits.

*Read:* 7.12–7.15, p. 186.

*Do:* p. 291: 8, 13 (using L'Hopital's rule); p. 295: 2, 4, 5, 7, 8, 9.

**Hand in Thursday, Nov. 9 in lecture** (7 points/problem).

1. p. N.5: 5.
2. p. N.5: 7.
3. p. O.11: 2.

### Tuesday, Nov. 14.

*Lecture:* Behaviour of  $\ln$  and  $\exp$ .

*Read:* 7.16; Notes P.

*Do:* p. 303: 1, 2, 9, 10, 11, 19, 22.

**Hand in Friday, Nov. 17 in lecture** (7 points/problem).

1. p. O.12: 7.
2. p. O.12: 8.

3. Let  $c$  be a positive number. Evaluate

$$\lim_{x \rightarrow +\infty} \left( \frac{x-c}{x+c} \right)^x.$$

**QUIZ 3** will be on Tuesday Nov. 21, *not* Friday Nov. 17 as announced on the syllabus. You may have a crib sheet consisting of whatever you want to write on one side of a  $8\frac{1}{2}$  by 11 sheet of paper. (No calculators!)