

# MAS115 Calculus I 2006-2007

Problem sheet for exercise class 9

- **Make sure you attend the exercise class that you have been assigned to!**
- Try to work on the problems first on your own. If you are stuck, ask for hints.
- The instructor and helper will be available for questions.
- Solutions will be available online by Friday.

Problem 1: **Making a simplifying substitution.** Evaluate

$$\int_0^{\sqrt{\ln 2}} 2xe^{x^2} dx .$$

Problem 2: **Completing the square.** Evaluate

$$\int \frac{d\theta}{\sqrt{2\theta - \theta^2}} .$$

Problem 3: **Using a trigonometric identity.** Evaluate

$$\int (\sin 3x \cos 2x - \cos 3x \sin 2x) dx .$$

Problem 4: **Eliminating a square root.** Evaluate

$$\int_{-\pi}^0 \sqrt{1 - \cos^2 \theta} d\theta .$$

Problem 5: **Reducing an improper fraction.** Evaluate

$$\int_{\sqrt{2}}^3 \frac{2x^3}{x^2 - 1} dx .$$

Problem 6: **Separating a fraction.** Evaluate

$$\int \frac{1-x}{\sqrt{1-x^2}} dx .$$

Problem 7: **Multiplying by 1.** Evaluate

$$\int \frac{1}{1 + \sin x} dx .$$

Extra: For what  $x > 0$  does  $x^{x^x} = (x^x)^x$  hold?