

Maple Workshops F7.1SC3, 2008
Assessment 2 (Week 4) (6.5)

Try all questions on the assessment. At the end of the class print out your worksheet and hand it in. **Layout your worksheet neatly and clearly number each answer.**

The worksheet you hand in at the end of the class should have the following information on it at the top:

Maple Assessment 2 (8.5)

Your full name

Your department

1. Assign g as

$$\frac{yx^2 - 1}{2(x^3 + y^2x^4 - 51x + 90)} .$$

- (a) Substitute $y = \frac{2}{x}$ into g to obtain a function only of x .
(b) Convert the result to partial fractions.

2. (a) Find all solutions for x in terms of y of the cubic equation

$$x^3 + x = y$$

- (b) Pick the real solution and plot it in the range $y \in [-10, 10]$.

3. Use plotting to determine the intervals within which lie solutions to the equation

$$-2 \cos \left(x + \frac{\pi}{4} \right) = -x^2 + 4x + 10 .$$

Find all of the solutions with the accuracy of 20 digits after the decimal point.

4. Solve the system of simultaneous linear equations

$$\begin{aligned} x - 3y + 7z &= 2 \\ 2x + y + z &= 8 \\ x + 2z &= 0 \end{aligned}$$

5. Assign the matrices

$$A = \begin{pmatrix} 1 & 1 \\ 0 & -1 \\ 3 & 0 \end{pmatrix}, \quad B = \begin{pmatrix} -1 & 0 & 1 \\ 4 & -1 & 0 \end{pmatrix}$$

- (a) Determine the matrices $C = (A \cdot B)^3$, $E = B \cdot A$
(b) Find $\det(C)$, $\det(E)$