

## MATHEMATICS 201-009-50

Precalculus

Martin Huard

Fall 2007

# Quiz #8

This quiz is due on **Wednesday October 17, 2007**.

This is to be done entirely with Maple. A print-out of your work is expected, where your name is written on top and each question is clearly indicated. To write text in Maple, you can click on **T** or go to INSERT – TEXT.

### Question 1 (1 points)

Evaluate  $3\sqrt{5} - 1$  to 20 decimal places.

### Question 2 (3 points)

a) Simplify  $\frac{1}{x} + \frac{1}{x+2} - \frac{x+1}{x+4}$

b) Factor  $x^4 - 3x^3 - 13x^2 + 15x$

c) Solve  $x^2 + 3x - 5 = 0$

### Question 3 (3 points)

Define the function  $f(x) = \begin{cases} x^2 - 4 & x < 1 \\ 3 - x & x \geq 1 \end{cases}$ .

a) Find  $f(-1)$  and  $f(2)$

b) Sketch the graph of  $f(x)$ . Make sure that you choose a window where all the important features of the curve are clearly seen.

### Question 4 (1 points)

Sketch the graph of the curve  $\frac{x^2}{4} - \frac{y^2}{9} = 1$ .

### Question 5 (7 points)

Define the functions  $f(x) = 2x^2 + 3x - 4$  and  $g(x) = 2x - 1$

a) Find, and simplify,  $\frac{f(x+h) - f(x)}{h}$ .

b) Find, and simplify,  $(fg)(x)$

c) Find, and simplify,  $(f \circ g)(x)$

d) Plot, on the same graph, the functions  $f$  and  $g$ . Make sure that you choose a window where all the important features of each curve are clearly seen.