MATH 205   L01   W 2006
MAPLE ASSIGNMENT

1. Evaluate $376^{25} + 4 \times 25^{41}$

2. (a)   Evaluate 1/53 to 150 digits.

   (b)   Is this a repeating decimal, and if so what is its period?

3. (a)   Evaluate π to 10 digits (e.g. to 5 digits it equals 3.1416)

   (b)   Evaluate π to 100 digits.

   (c)   What is the 100th digit of π?

4. Find   gcd(41447368471823, 769250900212).   (Ans. = 10,061)

5. Plot $y = x^2(x - 5)^2$, $-2 \le x \le 7$.

6. (a) Convert   56670821   to base 7.

   (b) Convert   56670821   to a Mayan number.

7. (a) Factor   8731448005663793693 .

   (b) Show $2^{101} - 1$ is not prime.

   (c) Show $2^{4253} - 1$ is prime (in 1961 it held the record as the largest known prime).

8. (a) Find the 200,000th prime number.

   (b) Find the first prime number larger than 1,000,000.

9. (a) Find $F_4 = 2^{2^4} + 1$, the 4th Fermat number, and determine whether it is prime, factors, or unknown.

   (b) Same for F_5.

   (c) Same for F_9.

   (d) Same for F_{15} (do not print the number itself, it is so large it takes pages to print).

10. (a) Solve $x^3 - 6x^2 - 7x + 58 = 0$, using the "fsolve" command.

   (b) Same using "solve" followed by "evalf(%)."

   (c) The answers in (a) and (b) are not the same - those in (a) are real numbers while those in (b) are complex (involve $I = \sqrt{-1}$). Explain how this is possible.