MATH 170 – Section 006 – Quiz 5

You may work with other class members on this quiz, but you may *not* receive assistance from people not in your MATH 170 section. You must show all of your work to receive full credit. Do all your work on other sheets of paper and be sure to staple all the pieces of paper together or YOU WILL GET A 'ZERO' ON THE QUIZ. Do not use decimal approximations unless asked to do so. Your work on this quiz must be handed in by the beginning of class on Friday, 9 October 2009. GOOD LUCK!

1) Let

$$g(x) = \left(x^2 - 3x + 2\right)\left(x^3 - 4\right).$$

a) Compute $g'(x)$ in two different ways:

i) Expand $g(x)$ and then differentiate.

ii) Apply the product rule to $g(x)$ as it is written and then simplify.

b) Which method do you prefer? Why?

2) Let

$$f(x) = \frac{6e^x - 5}{8\sqrt{x} - \frac{5}{x^2}}.$$

Find $f'(x)$.

3) Consider the graph of $y = x^2 - 3x + 4$. Find an equation of each line tangent to this curve that intersects the x-axis at the point $(3, 0)$.

4) A particle travels horizontally along the x-axis according to the position function

$$x(t) = t^4 - 10t^3 + 24t^2,$$

where t represents time (measured in seconds) and x represents location on the x-axis (measured in inches). Determine the maximum speed of the particle for $0 \leq t \leq 6$.