

**MTH 151****Quiz 6****Fall 2011**

Show all work in a neat and organized fashion. Clearly indicate your answers.  
20 points possible.

1. (5 pts.) Use Newton's method to find the root of the given equation to the best accuracy your calculator will display. Use the specified initial approximation  $x_1$ , and show your values for  $x_2$ ,  $x_3$ ,  $x_4$ , and so on, until the algorithm stabilizes.

$$x^3 - x^2 - 1 = 0, \quad x_1 = 1$$

Recall that

$$x_2 = x_1 - \frac{f(x_1)}{f'(x_1)} \quad \text{and} \quad x_{n+1} = x_n - \frac{f(x_n)}{f'(x_n)}.$$

2. (5 pts.) Find the most general antiderivative of  $f(x) = x - 5 + \sec^2 x$ .

In other words, find the indefinite integral.

$$\int (x - 5 + \sec^2 x) dx$$

3. (5 pts.) Find  $f(x)$ , given the following.

$$f'(x) = \sqrt{x}(30 + 60x), \quad f(1) = 50$$

4. (5 pts.) A particle is moving with the given data. Find the position function of the particle.

$$v(t) = \sin t + 12 \cos t, \quad s(0) = 3$$