Name: _____ **Section**: _____

Clear your desk of everything excepts pens, pencils and erasers. **Show all your work.**
If you have a question raise your hand and I will come to you.

1. Use Newton's Method to approximate $\sqrt[3]{25}$.

   (a) (1 point) **Multiple Choice. Circle the best answer. No partial credit available**
   When approximating $\sqrt[3]{25}$ using newtons method we should use the function $f(x)$ and starting point x_1 where:

   A. $f(x) = x^3 - 25$, $x_1 = 27$

   B. $f(x) = x^3 - 25$, $x_1 = 3$

   C. $f(x) = \sqrt[3]{x}$, $x_1 = 27$

   D. $f(x) = \sqrt[3]{x}$, $x_1 = 3$

   (b) (2 points) **Fill-in-the-Blank. No partial credit available**

   Using (a) above and Newton's method we can find that: $x_2 = 3 - \frac{2}{27}$

2. (1 point) Find the most general antiderivative of each function:

   (a) $f(x) = \sec(x)(3\sec(x) - \tan(x)) = 3\sec^2(x) - \sec(x)\tan(x)$

   Solution: The antiderivative $F(x)$ is given by

   $$F(x) = 3\tan(x) - \sec(x) + C$$

   (b) $f(x) = 1 + x + x^2 + x^3$

   Solution: The antiderivative $F(x)$ is given by

   $$F(x) = x + \frac{x^2}{2} + \frac{x^3}{3} + \frac{x^4}{4} + C$$