

Quiz 1.1 MTHU241 Fall 2004**Name:** _____

Please give your answers clearly in the space provided on this sheet. Show work where appropriate, possibly on the back. Point total = 20

- (1) (10 points) For the function $f(x) = 2x^3 - 8x + 9$, simplify the following expression as much as possible. Show your work in detail—IT is your answer.

$$\frac{f(x+h) - f(x)}{h} =$$

- (2) (8 points) A particle travels along the x -axis in such a way that its position at time t seconds is $x = \frac{12}{5t+9}$. If the units on the x -axis are feet, what is the average velocity, with units, of the particle from $t = 3$ to $t = 3.2$? Show work! Simplify your answer and **include units**.

Answer: _____

- (3) (2 points) Suppose you wanted to find a good numerical approximation to the instantaneous velocity at $t = 3$ of the particle in problem 2. Imagine that you can use a calculator but you have forgotten any calculus formulas that might give the answer. Very briefly but clearly tell how you would modify the calculation in problem 2 to get a good approximation to the velocity. (You are NOT being asked for the approximation, just how you would get it.) Answer below in a grammatically correct English sentence or two.

Quiz 1.2 MTHU241 Fall 2004**Name:** _____

Please give your answers clearly in the space provided on this sheet. Show work where appropriate, possibly on the back. Point total = 20

- (1) (10 points) For the function $f(x) = 5x^3 - 4x + 8$, simplify the following expression as much as possible. Show your work in detail—IT is your answer.

$$\frac{f(x+h) - f(x)}{h} =$$

- (2) (8 points) A particle travels along the x -axis in such a way that its position at time t seconds is $x = \frac{6}{5t+1}$. If the units on the x -axis are inches, what is the average velocity, with units, of the particle from $t = 2.8$ to $t = 3$? Show work! Simplify your answer and **include units**.

Answer: _____

- (3) (2 points) Suppose you wanted to find a good numerical approximation to the instantaneous velocity at $t = 3$ of the particle in problem 2. Imagine that you can use a calculator but you have forgotten any calculus formulas that might give the answer. Very briefly but clearly tell how you would modify the calculation in problem 2 to get a good approximation to the velocity. (You are NOT being asked for the approximation, just how you would get it.) Answer below in a grammatically correct English sentence or two.