

Quiz 2.1 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) (6 points) Find and simplify a formula for the average rate of change of the function $f(x) = \frac{1}{5x-7}$ from $x = c$ to $x = c+h$. Show your work in complete detail. Your work is your answer.

- (2) (4 points) **USING your ANSWER to PROBLEM 1**, find $f'(c)$, where, as in problem 1, $f(x) = \frac{1}{5x-7}$. (This takes little additional work, but correct use of notation is important. Make sure you show how you use the previous result.) $f'(c) =$

- (3) (5 points) Use (“shortcut”) rules of differentiation to find the following derivatives:

(a) $\frac{d}{dx} (3x^7 + 5x - \pi^2) =$

(b) $\frac{dt^{1/3}}{dt} =$

- (4) (5 points) Find the equation of the tangent line to the graph of $y = x^3$ at $x = 5$. Show work.

The equation is: _____

Quiz 2.2 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) (6 points) Find and simplify a formula for the average rate of change of the function $f(x) = \frac{1}{7x - 5}$ from $x = b$ to $x = b + h$. Show your work in complete detail. Your work is your answer.

- (2) (4 points) **USING your ANSWER to PROBLEM 1**, find $f'(b)$, where, as in problem 1, $f(x) = \frac{1}{7x - 5}$. (This takes little additional work, but correct use of notation is important. Make sure you show how you use the previous result.) $f'(b) =$

- (3) (5 points) Use (“shortcut”) rules of differentiation to find the following derivatives:

(a) $\frac{d}{dx} (7x^4 - 9x + \pi^3) =$

(b) $\frac{du^{1/5}}{du} =$

- (4) (5 points) Find the equation of the tangent line to the graph of $y = x^5$ at $x = 2$. Show work.

The equation is: _____