Quiz 2 for Mathematics 223
Introductory Analysis I - Fall 1999
Material Covered: Sections 2.1,2.2 of text and notes
For: 24th September

This is a 15 minute quiz, worth 6% and marked out of 6 points. The total possible points awarded for each question is given in square brackets at the beginning of each question. Anything that can fit on one side of an $8\frac{1}{2}$ by 11 inch piece of paper may be used as a reference during this quiz. A calculator may also be used. No other aids are permitted.

Name (please print): _____ . **ID Number:** _____.
last first

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1. [1] If $f(x) = 2^{\frac{4}{3}}$, $f'(x) \approx$ (circle one) **-1.5 / 0.5 / 0 / 2.0 / 2.5**

2. [1] Find $\frac{dy}{dx}$

for $y = 12x^{\frac{7}{6}}$. _____

3. [2] If $f(x) = (x-2)^2$, then

$\lim_{h\to 0} \frac{f(x+h)-f(x)}{h} =$ _____.

4. [2] At what point on the graph of $y = 3x^{\frac{2}{3}}$ is the slope equal to 10? (circle one) $(\frac{1}{125}, \frac{15}{125})$ / $(\frac{2}{125}, \frac{15}{125})$ / $(\frac{3}{125}, \frac{15}{125})$ / $(\frac{4}{125}, \frac{15}{125})$ / $(\frac{5}{125}, \frac{15}{125})$

1. [1] **0**

2. [1] $14x^{\frac{1}{6}}$

3. [2] If $f(x) = (x-2)^2$, then
$\lim_{h\to 0} \frac{f(x+h)-f(x)}{h}$
$= \lim_{h\to 0} \frac{((x+h)-2)^2-(x-2)^2}{h}$
$= \lim_{h\to 0} \frac{x^2+xh-2x+xh+h^2-2h-2x-2h+4-(x^2-4x+4)}{h}$
$= \lim_{h\to 0}(2x+h-4) = 2x-4$

4. [2] $\left(\frac{\mathbf{1}}{\mathbf{125}}, \frac{\mathbf{15}}{\mathbf{125}}\right)$
since $\frac{dy}{dx} = 2x^{-\frac{1}{3}}$, $2x^{-\frac{1}{3}} = 10$ or $x = \frac{1}{125}$
and so $y = y = 3x^{\frac{2}{3}} = 3\left(\frac{1}{125}\right)^{\frac{2}{3}} = \frac{3}{25}$