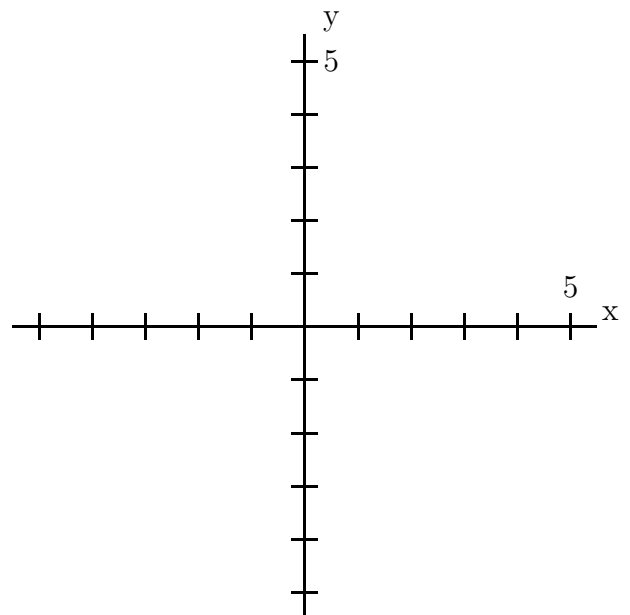


MATH 211, Section C TEST I NAME _____
Prof. J. Beachy 9/20/02 Circle recitation time: T 10:00 T 11:00 Th 10:00
NO CALCULATORS! Be sure to show all necessary work.

1. (7 pts; p 38 #37) Find the domain of $f(x) = \frac{x^2 - 3x}{|4x - 7|}$.

2. (8 pts; p 51 #27) Find the slope of the line containing the points $(\frac{2}{5}, \frac{1}{2})$ and $(-3, \frac{4}{5})$.

3. (10 pts; p 63 Ex 6) On the axes below, graph $3x + 3y = -6$ and $y = \frac{1}{x}$.



4. (15 pts; p 148 #2,13,20) Find the derivative of each of the following functions. Use the power rule—do *not* use the limit definition of the derivative.

(a) If $f(x) = x^8$, then $f'(x) =$

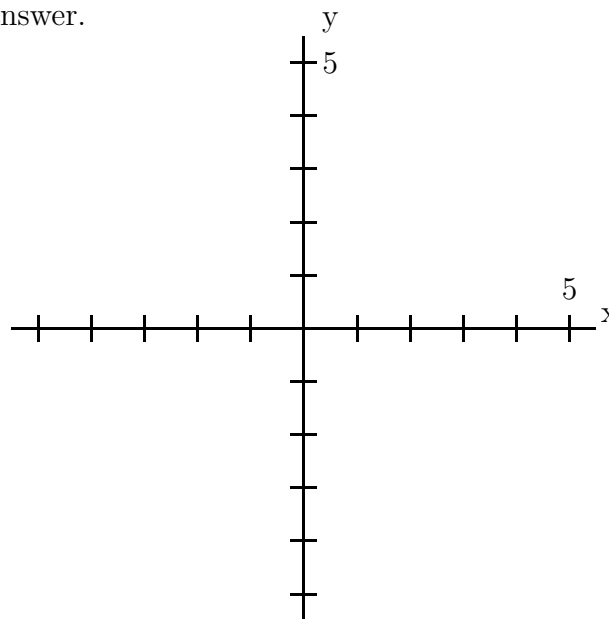
(b) $\frac{d}{dx} \left(\frac{1}{2}x^{4/5} \right) =$

(c) If $f(x) = \sqrt[5]{x} - \frac{2}{x} =$, then $f'(x) =$

5. (10 pts) (a) Find an equation of the tangent line to the graph of $y = \frac{1}{x^2}$ at $(2, \frac{1}{4})$.

(b) Find the point on the graph of $y = x^2$ where the tangent line has the same slope as the line $2x - y = 4$.

6. (10 pts) Graph the function $f(x) = \begin{cases} x^2 - 1 & \text{for } x < 1 \\ 2x - 2 & \text{for } x \geq 1 \end{cases}$
Is $f(x)$ continuous at $x = 1$? Explain your answer.



7. (15 pts) Find these limits (using the algebraic method).

$$\lim_{x \rightarrow 4} \frac{x^2 - 5x + 4}{x^2 - 3x - 4} =$$

$$\lim_{x \rightarrow -1} \frac{4x^2 + 5x - 7}{3x^2 - 2x + 1} =$$

$$\lim_{x \rightarrow 0^-} \frac{|x|}{x} =$$

8. (25 pts; p 137 #11, 29)

(a) Complete the limit definition of the derivative of a function $f(x)$:

$$f'(x) = \lim_{h \rightarrow 0}$$

(b) **Use the limit definition** of the derivative of a function to find $f'(x)$, for the function

$$f(x) = x^2 + x.$$

(c) **Use the limit definition** of the derivative of a function to find $f'(x)$, for the function

$$f(x) = \frac{1}{x^2}.$$

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Total	/100
Grade	