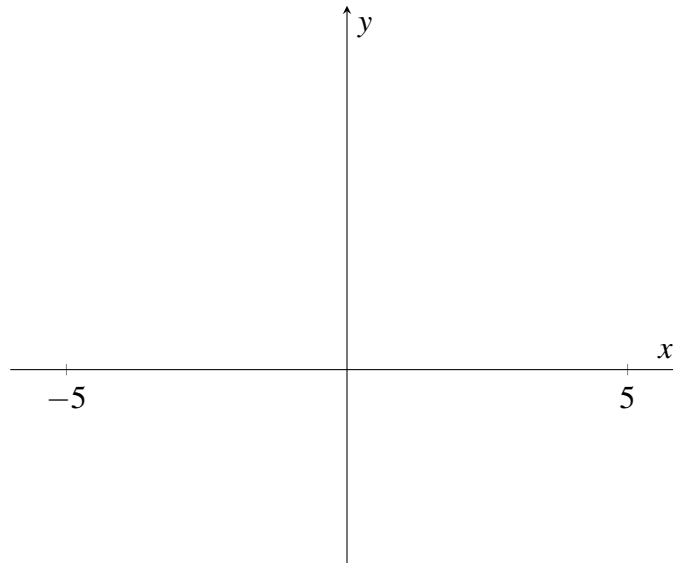


Name: _____

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There are 30 points possible on this quiz. No aids (book, calculator, etc.) are permitted. Show all work for full credit.

1. **[5 points]** Sketch a function on $[-5, 5]$ that has an absolute maximum value of 3 at $x = 4$, an absolute minimum value of -2 at $x = -4$, and a local maximum at $x = 1$. You should appropriately label notable values on the x - and y -axes for full credit.



2. **[5 points]** Find all critical numbers (a.k.a. critical points) of the function $f(x) = x(x - 1)^{1/3}$. Be careful!

3. [10 points] Find the maximum and minimum values of the function $f(x) = 1/x - 1/x^2$ on the interval $[1, 10]$.

4. [5 points] Suppose f is continuous on $[-2, 2]$ and has a derivative at each point in $(-2, 2)$. Suppose $f(-2) = 6$ and $f(2) = -4$. What does the Mean Value Theorem let you conclude?

5. [5 points] Draw a diagram that illustrates the Mean Value Theorem in the context of the previous problem. Your illustration should include a tangent line somewhere.

