

Name: _____

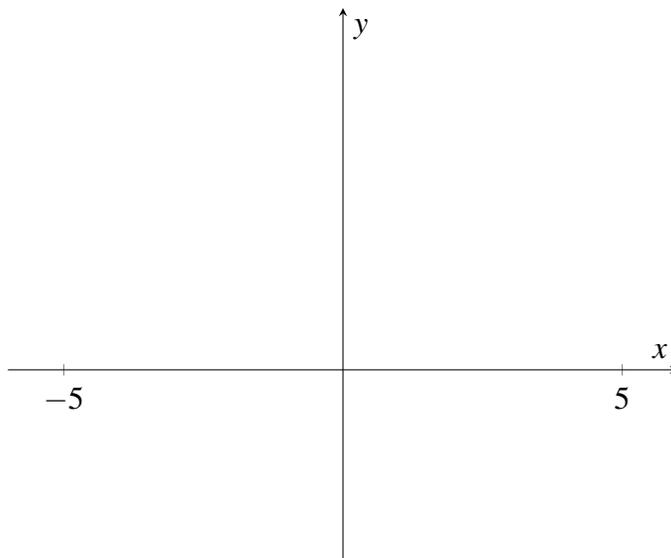
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Instructor: Bueler | Jurkowski | Maxwell

There are 25 points possible on this quiz. No aids (book, calculator, etc.) are permitted. Show all work for full credit.

1. [4 points] Find all critical numbers (a.k.a. critical points) of the function $f(x) = \sqrt[5]{x^2 - 4}$. Be careful!

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



3. [8 points] Find the maximum and minimum values of the function $f(x) = 4x + \frac{1}{x}$ on the interval $[1/5, 1]$.

4. [8 points] Suppose f is continuous on $[-2, 2]$ and has a derivative at each point in $(-2, 2)$. Suppose $f(-2) = 4$ and $f(2) = -6$.

a. What specifically does the Mean Value Theorem let you conclude?

b. Draw a diagram that illustrates the Mean Value Theorem for this problem. Your illustration should include a tangent line somewhere.

