QUIZ 5 - MATH 112 Friday, October 3

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Read each problem **very carefully** before starting to solve it. Each problem is worth 5 points. It is necessary to show **all** your work. Correct answers without explanations are worth 0 points. GOOD LUCK!!

1. Consider the function $f(x) = \dfrac{4x}{x^2+1}$.

   Find its domain:

   its vertical asymptotes:

   its horizontal asymptote:

   create the sign table for the first derivative, clearly indicating the intervals of monotonicity and the relative extrema:

   and, finally, sketch the graph of $y = f(x)$.

2. Consider the function $f(x) = 2x^3 - 3x^2 - 12x + 12$. Create the joint sign table for the first and second derivatives, clearly indicating intervals of monotonicity and concavity, the relative extrema and the inflection points:

Finally, sketch the graph of $y = f(x)$.