Math 140 Worksheet 10
Week 10: Curve Sketching

Instructions. Write clear solutions on your own paper. Show enough work to justify your answers. Upload a single PDF of your work to Canvas. Use the curve sketching checklist below to organize your analysis before drawing the graph.

Curve Sketching Checklist
To sketch the graph of a function $f(x)$, analyze the following features.

1. Domain
2. Intercepts
3. Vertical asymptotes
4. Horizontal asymptotes using
$$\lim_{x\to\infty} f(x), \qquad \lim_{x\to-\infty} f(x)$$
5. First derivative $f'(x)$
6. Critical numbers
7. Increasing/decreasing intervals
8. Local maxima and minima
9. Second derivative $f''(x)$
10. Concavity and inflection points

1. Let
$$f(x) = \frac{x^2}{x-1}.$$
Use the curve sketching checklist to analyze the function and sketch its graph.

2. Let
$$f(x) = \frac{\ln x}{x}.$$
Use the curve sketching checklist to analyze the function and sketch its graph.