Practice worksheet | Functions and graph sketching

Combining graphical/algebraic/calculus information in sketches

Name: _____ Date: _____

6 questions | 23 marks

1. Sketch $y = x + \frac{1}{x}$ using its domain, extrema and asymptotes. [5 marks]

2. Give a complete sketch description of $y = |x - 2| - 3$. [4 marks]

3. A student draws one continuous curve through $x = 1$ for $y = \frac{x^2}{x - 1}$. Explain and correct the sketch. [3 marks]

4. For $y = \frac{1}{x^2+1}$, justify the complete graph from symmetry, derivative and limits. [4 marks]

5. Two formulas simplify to the same expression. Explain why their graphs might still differ. [3 marks]

6. Find the tangent to $f(x) = \frac{x}{x^2+1}$ at $x = 0$ and explain why it does not determine the whole graph. [4 marks]