Practice worksheet | Functions and graph sketching

Rational functions

Name: _____ Date: _____

6 questions | 20 marks

1. Find the hole in $f(x)=\frac{x^2-1}{x-1}$. [3 marks]

2. Divide $\frac{x^2+1}{x-1}$ and state the oblique asymptote. [3 marks]

3. Analyse $f(x)=\frac{2x+1}{x-3}$: give asymptotes and intercepts. [4 marks]

4. Find the stationary points and range of $f(x) = \frac{x}{x^2+1}$. [4 marks]

5. For $f(x) = \frac{x-2}{x^2-4}$, state the domain, simplified rule and discontinuities. [4 marks]

6. Can a graph cross a horizontal asymptote? Use $f(x) = \frac{x}{x^2+1}$ to justify your answer. [2 marks]