Practice worksheet | Functions and graph sketching

Rational functions

Name: _____ Date: _____

6 questions | 20 marks

1. Find the hole in $f(x) = (x^2 - 1)/(x - 1)$. [3 marks]

2. Divide $(x^2 + 1)/(x - 1)$ and state the oblique asymptote. [3 marks]

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

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

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

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