

PreCalc 12 – Chapter 2 Practice Non-Calculator Section v1

Name: Key

Block: _____

Sketching Graphs of Rational Functions $\frac{P(x)}{Q(x)}$

Sketch the rational function $f(x) = -\frac{1}{2} \frac{(x^2 - 7x + 12)(x + 4)}{x^2 - 5x + 4} = \frac{(x-3)(x-4)(x+4)}{-2(x-1)(x-4)}$

1. Use NPV's to find the vertical asymptotes and holes (coordinates). (1 mark)

NPV's: $x=1, 4$

VA: $x=1$
hole: $(4, \frac{1(8)}{-2(3)}) = (4, -\frac{4}{3})$

2. Horizontal asymptotes occur where $\deg(P(x)) \leq \deg(Q(x))$. (1 mark)

$\frac{\deg 3}{\deg 2}$

3. Slant or oblique asymptotes occur when $\deg(P(x)) = \deg(Q(x)) + 1$. Use polynomial division for the slant asymptote. (1 mark)

4. Find behaviour near vertical asymptotes. (1 mark)

5. Find x-intercepts. (1 mark)

6. Find y-intercept. (1 mark)

7. Label all intercepts and asymptotes. (1 mark)

8. Join points smoothly. (2 marks)

