

Unit 5 Review

Topics

1. Determining End Behaviour & Asymptotes of Rational Functions
2. Sketching Sums of Functions Given Graphs
3. Sketching Rational Functions Using Sum of Functions (from equation)
 - using long/synthetic division
 - using partial fractions
 - by sketching the reciprocal function
5. Solving Rational Equalities
6. Solving Rational Inequalities (and sketching to verify solutions)

Questions

1. Text page 420 #15, and page 426 #1

2. Sketch the following functions:

a) $f(x) = \frac{2x^2 - 7x + 3}{x - 1}$

b) $y = \frac{x}{x^2 - 4}$

c) $y = \frac{1}{x^2 - 4}$

3. Solve the following:

a) $\frac{3x^2 - 3x}{4} + \frac{x - 1}{2} = 3$

b) $\frac{1}{x} = \frac{2}{x} + 1 + \frac{1}{1 - x}$

4. Solve the following inequalities.

a) $\frac{-t}{4t - 1} \geq \frac{2}{t - 9}$

b) $\frac{3}{x - 2} - \frac{x - 3}{x + 1} > \frac{x}{x - 2}$

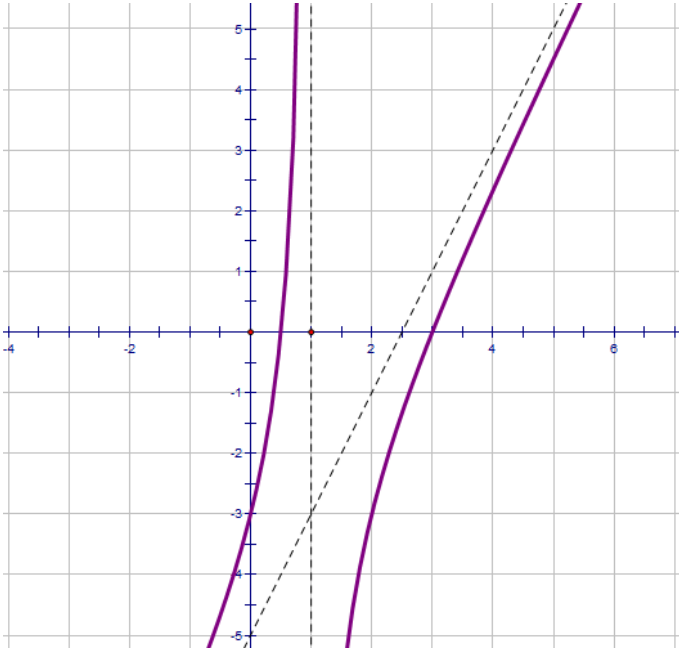
c) $\frac{x^3 - x^2 - 5x - 3}{x^2 - x} > 0$

5. A tub has both a hot and cold tap. The tub can be filled in 30 minutes if just the cold tap is running. It can be filled in 20 minutes if both the hot and cold taps are used together. How long would it take to fill the tub just using the hot water tap?

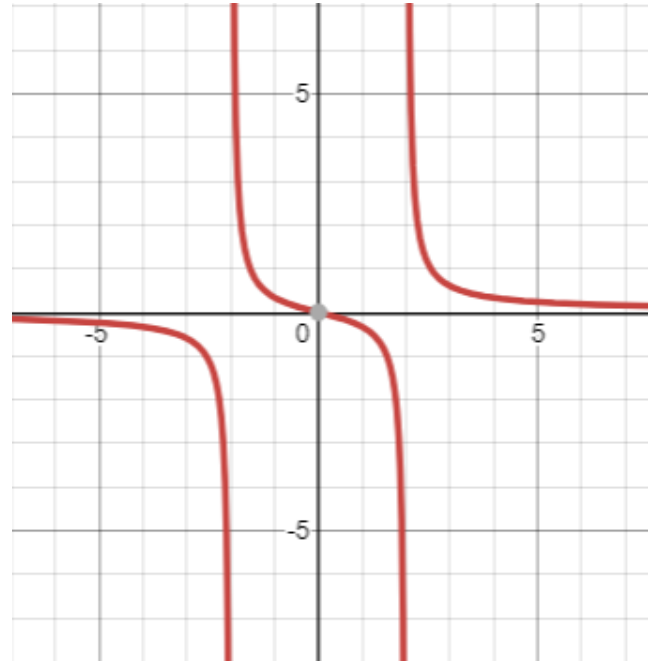


Final Answers

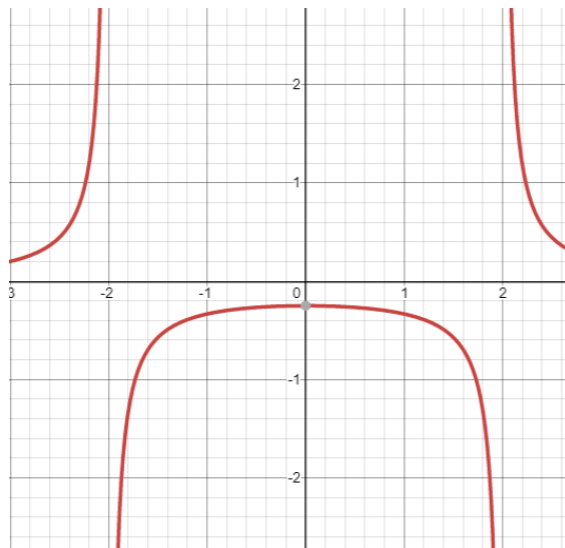
2. a) $f(x) = 2x - 5 - \frac{2}{x-1}$



b) $f(x) = \frac{1}{2(x-2)} + \frac{1}{2(x+2)}$



c) Sketch the reciprocal of $y=x^2-4$ to get:



3. a) $x = -2$ and $x = 7/3$ b) $x = \frac{1 \pm \sqrt{5}}{2}$

4. a) $-1 \leq t < 0.25$ and $2 \leq t < 9$ b) $-1 < x < \frac{1}{2}$, $2 < x < 3$ c) $x > 3$, $0 < x < 1$ 5. 60 minutes