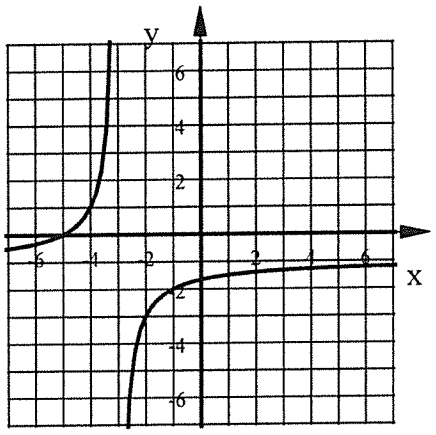
# Alg 2 Chapter 9 Final Exam Review Spring 2019

1. Find all points of discontinuity and state if they are holes or vertical asymptotes. $y = \dfrac{x^2 - 16}{2x^3 - 2x^2 - 24x}$

2. Write the equation of the Horizontal Asymptote of each, if any.

a) $y = \dfrac{6x^2 + 10x - 3}{2x^2 - 5x + 1}$ b) $y = \dfrac{14x + 3}{7x^2 - 4x - 5}$ c) $y = \dfrac{8x^3 + 9x^2 - 4}{2x^2 + 3x + 4}$

3. Write the equation of this graph which is a transformation of $y = \dfrac{2}{x}$




4. Solve each rational equation.

a) $\dfrac{5}{x+3} = \dfrac{2x}{x^2+5x+6} + \dfrac{7}{x+2}$ b) $\dfrac{2x^2 - 6x - 18}{x^2 + 3x + 2} + \dfrac{4}{x+1} = \dfrac{x}{x+2}$

5. Simplify. **State** restrictions on the variables.

$\dfrac{3x^2 + 18x}{x^2 + 5x - 6} \cdot \dfrac{x^3 - 9x^2 + 20x}{x^2 - 4x - 5} \div \dfrac{6x^2 - 24x}{x^2 - 1}$

6. Simplify. Don't state restrictions on the variables.

a) $\dfrac{\dfrac{3x}{2y^3} - \dfrac{5}{6x^2y^4}}{\dfrac{6y}{x^5} + \dfrac{7}{8xy^2}}$ b) $\dfrac{3x}{x^2 + 7x + 12} - \dfrac{4}{2x^2 + 4x - 16}$

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1. Points of discontinuity are $x = 0, -3, 4$ Holes: $x = 4$ VA: $x = -3, 0$

2. a) $y = 3$ b) $y = 0$ c) No HA 3. $y = \dfrac{-2}{x+3} - 1$ 4. a) $x = \dfrac{-11}{4}$ b) $x = 5$

5. $\dfrac{x}{2}$ $x \neq -6, 0, \pm 1, 5, 4$

6. a) $\dfrac{36x^6y - 20x^3}{144y^5 + 21x^4y^2}$ b) $\dfrac{6x^2 - 16x - 12}{2(x-2)(x+3)(x+4)}$