Alg 2 Chapter 9 Review Fall 2013

Only state restrictions on variables when indicated.

1. Simplify. State any restrictions on the variable. $\dfrac{6x^4+6x^3-36x^2}{8x^3-32x}$

2. Simplify this product. $\dfrac{2x^2+6x}{x^2-1} \cdot \dfrac{x^2-3x-4}{x^4-x^3-12x^2}$

3. Simplify this quotient. $\dfrac{4x^2-36x+32}{2x^2-13x-7} \div \dfrac{x^2+4x-5}{x^2-2x-35}$

Find each sum or difference. Simplify your answer.

4. $\dfrac{5x}{x^2-1} - \dfrac{3x}{x^2+3x+2}$

5. $\dfrac{1}{x^2+8x+16} + \dfrac{2}{x^2+4x}$

Simplify each.

6. $\dfrac{\frac{6}{x^3}+1}{\frac{4}{y^2}}$

7. $\dfrac{\frac{3}{x-1}+7}{4-\frac{1}{x-1}}$

8. $\dfrac{\frac{7}{x^4}+\frac{3}{y}}{\frac{2}{y^2}-\frac{1}{x^2}}$

9. $\dfrac{\frac{4}{x+4}}{\frac{3}{x+2}-\frac{2}{x^2+6x+8}}$

Solve each. Check for extraneous solutions.

10. $\dfrac{5}{x-6} - \dfrac{3}{x+2} = \dfrac{1}{x^2-4x-12}$

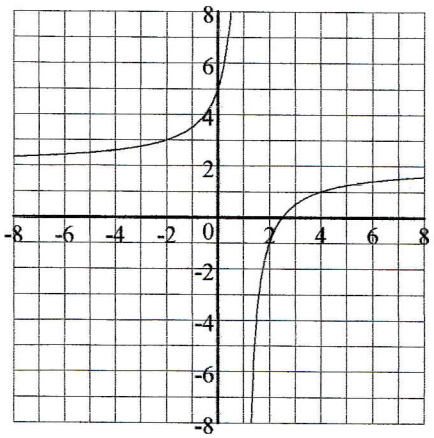
11. $\dfrac{11}{3x} + \dfrac{4}{x^2} = \dfrac{1}{3}$

12. $\dfrac{x}{x+2} = \dfrac{x+10}{x^2-4}$

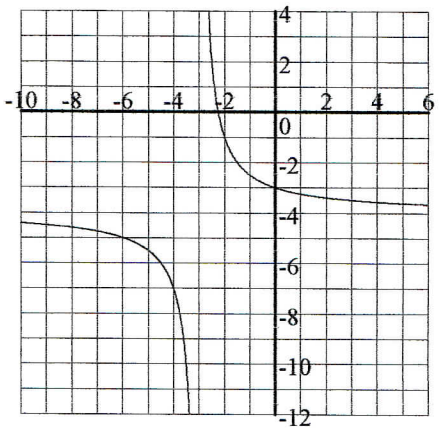
13. $\dfrac{3x}{x-4} + \dfrac{20}{x^2-3x-4} = \dfrac{4x}{x+1}$

14. Each graph is a translation of the function $y = \frac{3}{x}$. Write the equation of each.

a)



b)



15. Does each table represent Direct Variation, Inverse Variation or Neither?
If there is a Direct or Inverse Variation relationship write a variation equation.

a)

X	Y
−8	−12.5
10	10
40	2.5
125	0.8

b)

X	Y
−6	24
−5	4.8
8	48
12	4

c)

X	Y
−12	54
−3	13.5
8	−36
20	−90

16. H varies directly with the product of C and D but inversely with the square of E. $H = 7.68$ when $C = 24$, $D = 10$, and $E = 5$. Find the value of C when $H = 20, D = 4$, and $E = 6$.

17. Find all points of discontinuity and calssify them as either Holes or Vertical Asymptotes.

$$y = \frac{4x^2 - 20x}{x^2 - 25}$$

18. State the equation of the Horizontal Asymptote, if any.

a) $y = \dfrac{9x^2 + 15x - 8}{3x - 2}$ b) $y = \dfrac{12x + 7}{2x^2 - 1}$ c) $y = \dfrac{10x^2 - 18x + 21}{4x^2 + 7}$

19. Graph the given rational function. Show the intercepts, the asymptotes as dashed lines, and the correct behavior around each asymptote.

$$y = \frac{(2x+1)(x-3)}{(x-5)(x+2)} = \frac{2x^2 - 5x - 3}{x^2 - 3x - 10}$$

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1. $\dfrac{3x(x+3)}{2(x+2)}$ $x \neq 0, \pm 2$ 2. $\frac{2}{x(x-1)}$ 3. $\frac{4(x-8)}{2x+1}$

4. $\frac{2x^2+13x}{(x+2)(x+1)(x-1)}$ 5. $\frac{3x+8}{x(x+4)^2}$ 6. $\dfrac{6y^2 + x^3y^2}{4x^3}$

7. $\frac{7x-4}{4x-5}$ 8. $\dfrac{7y^2 + 3x^4y}{2x^4 - x^2y^2}$ 9. $\frac{4x+8}{3x+10}$

10. $x = -13.5$ 11. $x = -1, 12$ 12. $x = 5$ 13. $x = 20$

14. a) $y = \dfrac{-3}{x-1} + 2$ b) $y = \dfrac{3}{x+3} - 4$

15. a) Inverse Variation $y = \dfrac{100}{x}$ b) Neither c) Direct Variation $y = -4.5x$

16. $y = \dfrac{0.8CD}{E^2}$ $C = 225$ 17. Hole: $x = 5$ VA: $x = -5$

18. a) No HA b) HA: $y = 0$ c) HA: $y = 2.5$

19. HA: $y = 2$ VA: $x = -2, 5$ x-int: $-0.5, 3$ y-int: $\frac{3}{10}$