Alg 2 Chapter 9 Review Fall 2014

Only state restrictions on variables when indicated.

1. State if each table represents Direct Variation, Inverse Variation, or Neither. For the tables that show a variation do the following:

i) State which kind of variation

ii) State the variation constant.

iii) Write the variation equation with the value of the constant.

iv) Find the value of x when $y = 100$

a)

X	Y
−4	32.8
8	65.6
15	−124
40	−320

b)

X	Y
−20	−6.2
−8	−15.5
5	24.8
16	7.75

c)

X	Y
12	54
40	180
56	252
70	315

For each statement in 2 and 3 write the variation equation it represents

2. H varies directly with the product of M and N and inversely with the square of P

3. E varies jointly with B and the cube of G and inversely with the product of J and the square of K

4. A varies directly with D and inversely with the square of C. $A = 15$ when $D = 12$ and $C = 4$.

a) Find the variation constant.

b) Find the value of A when $D = 12$ and $C = 7$

c) Find the value of D when $A = 75$ and $C = 3$

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

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

7. 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.

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

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

Simplify each.

10. $\dfrac{\frac{6}{x^3}+1}{\frac{4}{y^2}}$ 11. $\dfrac{\frac{3}{x-1}+7}{4-\frac{1}{x-1}}$ 12. $\dfrac{\frac{7}{x^4}+\frac{3}{y}}{\frac{2}{y^2}-\frac{1}{x^2}}$ 13. $\dfrac{\frac{4}{x+4}}{\frac{3}{x+2}-\frac{2}{x^2+6x+8}}$

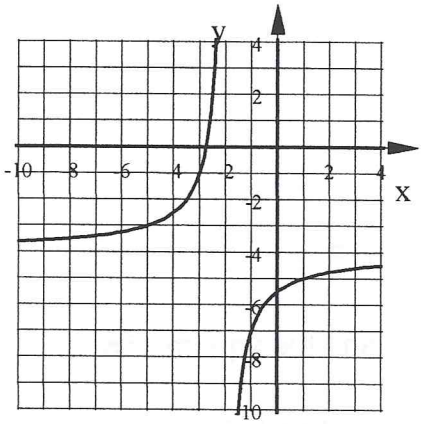
Solve each. Check for extraneous solutions.

14. $\dfrac{5}{x-6}-\dfrac{3}{x+2}=\dfrac{1}{x^2-4x-12}$ 15. $\dfrac{11}{3x}+\dfrac{4}{x^2}=\dfrac{1}{3}$

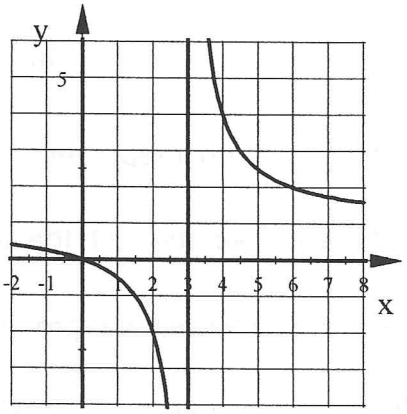
16. $\dfrac{x}{x+2}=\dfrac{x+10}{x^2-4}$ 17. $\dfrac{3x}{x-4}+\dfrac{20}{x^2-3x-4}=\dfrac{4x}{x+1}$

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

a)



b)



19. Sketch each reciprocal function. Show the asymptotes as dashed lines.

a) $y=\dfrac{-10}{x-1}-5$ b) $y=\dfrac{0.25}{x+4}+3$

20. State the holes and vertical asymptotes of this rational function, if any. $y=\dfrac{3x(2x-7)(x+4)(x-9)}{12x(x+4)(x-5)(x+7)}$

21. State the horizontal asymptote of each rational function, if any.

a) $Y=\dfrac{9x^2+8x-3}{2x+15}$ b) $Y=\dfrac{8x^3+3x-10}{3x^3+4x}$ c) $Y=\dfrac{x^2+5x+6}{2x^3-3}$

22. Graph each rational function showing x and y intercepts, the asymptotes as dashed lines and, the proper behavior around each asymptote.

a) $Y=\dfrac{x+4}{x^2-x-6}=\dfrac{x+4}{(x-3)(x+2)}$ b) $Y=\dfrac{3x^2-14x-5}{x^2-3x-4}=\dfrac{(3x+1)(x-5)}{(x+1)(x-4)}$