Algebra 2H Name _____
Review 9.1 – 9.6

Tell whether x and y show direct variation, inverse variation, or neither.

1. $y-4=2(x-2)$
2. $xy=\frac{x}{3}$
3. $2x=\frac{1}{y}$
4. $y^2=\frac{6y}{x}$

The variables *x* and *y* vary inversely. Write an equation relating x and y. Then solve for the given variable.

5. x = 3, y = 2; Find y when x = 2
6. x = $\frac{1}{2}$, y = 12; Find y when x = 3
7. x = 2.4, y = 3.6; Find x when y = 0.25
8. x = $\frac{5}{6}$, y = $\frac{3}{4}$; Find x when y = 0.25

13. Boyle's Law states that for a constant temperature, the pressure *p* of a gas varies inversely with its volume *V*. A sample of oxygen gas has a volume of 50.25 cubic milliliters at a pressure of 20.6 atmospheres.
a) Find the constant of variation *k*.

b) Write an equation that relates *p* and *V*.

c) Find the volume of the oxygen gas if the pressure changes to 15.2 atmospheres.

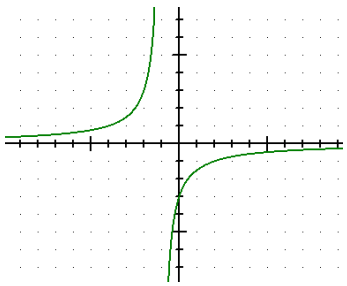
Graph the following functions. Be sure to sketch any asymptotes. Also state the domain and range.

14. $y=\frac{-3}{x+2}$
15. $y=\frac{3x-2}{2x+1}$

Identify any vertical and/or horizontal asymptotes of the graph of each function below.

16. $y=\frac{x^2-2x+1}{x^2-2}$
17. $y=\frac{2x-1}{x^2+7}$
18. $y=\frac{3x^2+2x-8}{x^2+3}$
19. $y=\frac{x^2-25}{x-4}$

20. Write a possible equation for the graph of the hyperbola.



Simplify each completely.

21. $\frac{5}{2x}-\frac{7}{12}$

22. $\frac{x^2-1}{4x+8}\cdot\frac{x^2-7x-18}{x^2-10x+9}$

23. $\frac{3}{x}+\frac{2}{x-2}-\frac{2}{x^2}$

24. $\frac{\frac{3}{x+2}+\frac{2}{3}}{\frac{2x}{x+2}-\frac{1}{x}}$

25. $\frac{3x^2+4x+1}{x^2-4}\div\frac{x+1}{x^2+8x+12}$

26. $\frac{44x^7y^4}{5xy^2}\cdot\frac{12xy^5}{22x^5y^3}$

27. $\frac{2x^2-6x}{5x}\div\frac{x^3-3x^2-4x+12}{x^2-4}$

28. $\frac{\frac{2}{x}+\frac{3}{x-1}}{\frac{1}{2x-2}}$

29. $\frac{x-2}{x^2+x-12}+\frac{x}{x^2-2x-3}$

30. $\frac{4}{5x-10}-\frac{2}{3x^2-5x-2}$

Solve for x and make sure to check your answers!

31. $\frac{4}{2x}=\frac{5}{x+6}$

32. $\frac{1}{x-2}+2=\frac{3x}{x+2}$

33. $\frac{18}{x^2-3x}-\frac{6}{x-3}=\frac{5}{x}$

34. $x^2+4x+9=0$

35. $2(x-4)-5=3(x-8)$

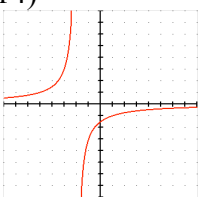
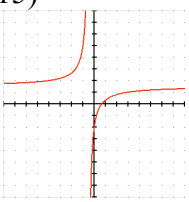
36. $x^3+3x^2-6x-18=0$

37. $2\sqrt{x-5}+2=-2$

38. $4x^{\frac{3}{2}}=256$

39. $\ln(4x)+\ln(2x)=5$

40. $3\bullet 5^{x+3}=15$

1) Direct	2) Neither	3) Inverse	4) Inverse	5) $y=\frac{6}{x}, y=3$
6) $y=\frac{6}{x}, y=2$	7) $y=\frac{8.64}{x}, x=34.56$	8) $y=\frac{5}{8x}, x=2.5$	13) a) $a=1035.15$ b) $p=\frac{1035.15}{V}$ c) $V=68.1\,mL^3$	14)  V.A.: $x=-2$ H.A: $y=0$ D: $\circ, x\neq -2$ R: $\circ, y\neq 0$
15)  V.A.: $x=-\frac{1}{2}$ H.A: $y=\frac{3}{2}$ D: $\circ, x\neq -\frac{1}{2}$ R: $\circ, y\neq \frac{3}{2}$	16) V.A.: $x=\sqrt{2}$ $x=-\sqrt{2}$ H.A.: $y=1$	17) V.A.: *none* H.A.: $y=0$	18) V.A.: *none* H.A.: $y=3$	19) V.A.: $x=4$ H.A.: *none*
20) $y=-\frac{3}{x+1}$	21) $\frac{-7x+30}{12x}$	22) $\frac{x+1}{4}$	23) $\frac{5x^2-8x+4}{x^2(x-2)}$	24) $\frac{x(2x+13)}{3(2x^2-x-2)}$
25) $\frac{(3x+1)(x+6)}{(x-2)}$	26) $\frac{24x^2y^4}{5}$	27) $\frac{2}{5}$	28) $\frac{2(5x-2)}{x}$	29) $\frac{(2x-1)(x+2)}{(x-3)(x+4)(x+1)}$
30) $\frac{6(2x-1)}{5(x-2)(3x+1)}$	31) $x=4$	32) $x=8$ $x=-1$	33) no solution	34) x $=-2\pm i\sqrt{5}$
35) x = 11	36) x = $-3, \pm\sqrt{6}$	37) No solution	38) x = 16	39) $x\approx 4.31$ 40) x = -2