Algebra 1.2 **Chapter 12 Review** **Name**_____

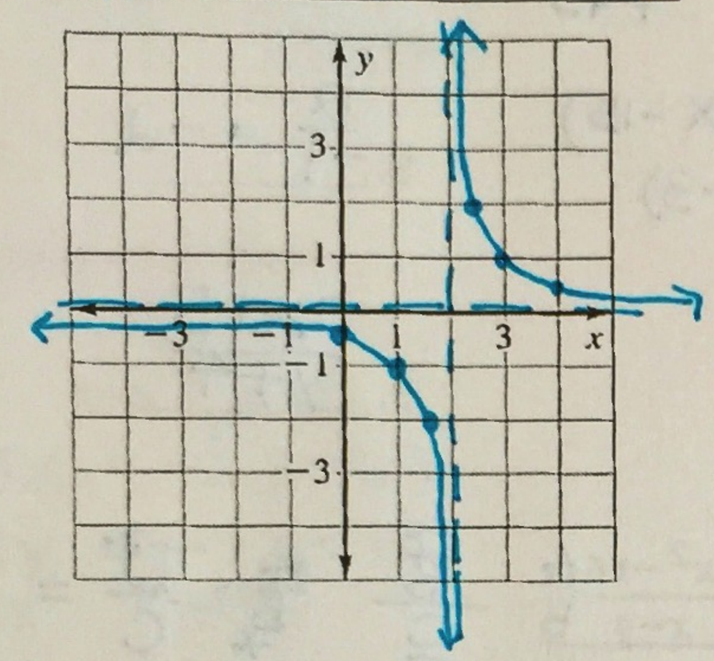
State the domain and range, complete the table, and graph each rational equation.

1. $y = \frac{1}{x-2}$

Domain: ARNE 2 V

Range: ARNE 0 H

x	0	1	1.5	2	2.5	3	4
y	-½	-1	-2	X	2	1	½

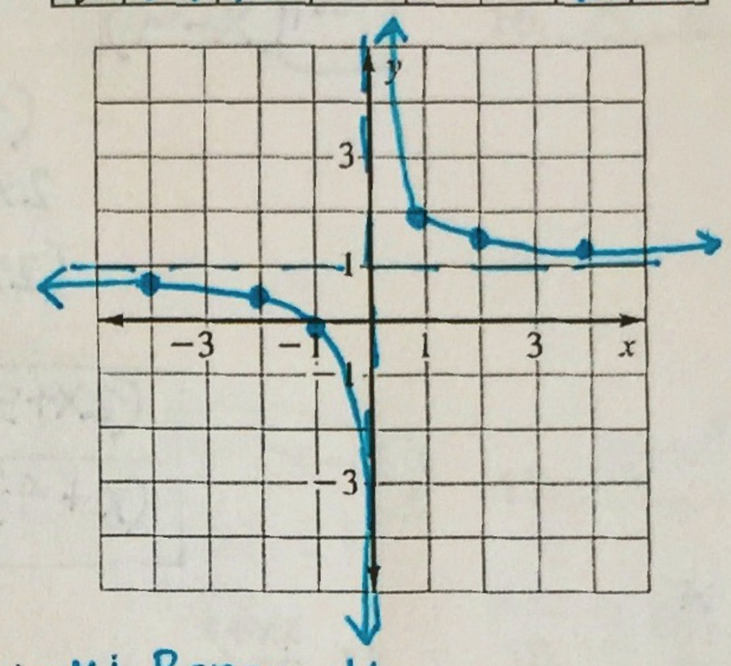


2. $y = \frac{1}{x} + 1$

Domain: ARNE 0 V

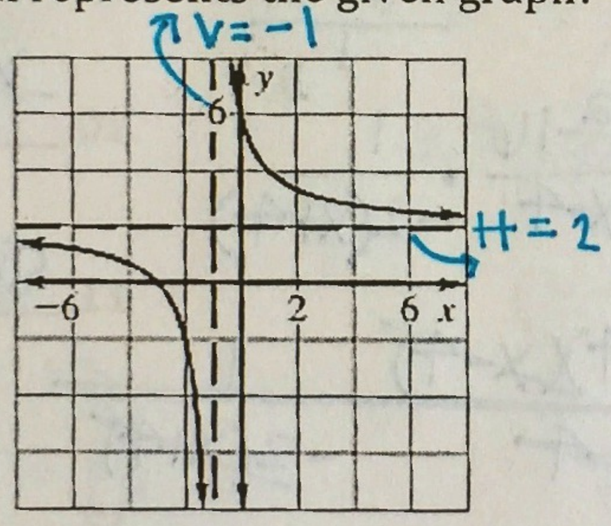
Range: ARNE 1 H

x	-4	-2	-1	0	1	2	4
y	¾	½	0	X	2	1½	1¼



3. Which equation represents the given graph?

Domain V; Range H



A. $y = \frac{4}{x+1} - 2$ H=-2 V=-1

B. $y = \frac{4}{x-1} - 2$ H=-2 V=1

C. $y = \frac{4}{x+1} + 2$ H=2 V=-1

D. $y = \frac{4}{x-1} + 2$ H=2 V=1

3. C.

Divide each. Show proper work!

4. $(18x^4 + 54x^2 - 6x) \div 6x$

$3x^3 + 9x - 1$

$6x \overline{)18x^4 + 54x^2 - 6x}$

$18x^4$ $-54x^2$ $-6x$

0 0 0

4. $3x^3 + 9x - 1$

5. $(x^2 + 3x - 6) \div (x + 1)$

$x + 2$

$x+1 \overline{)x^2 + 3x - 6}$

$x^2 + x$

$2x - 6$

$2x + 2$

-8

$\frac{-8}{x+1}$

5. $x + 2 \frac{-8}{x+1}$

ARN except $x = 0$ $x + 2 + \frac{-8}{x+1}$ *ARN except* $y = 0$ C *ARN except* $y = 1$ $3x^3 + 9x - 1$ *ARN except* $x = 2$

6. What is the remainder when you divide $12x^2 + 17x - 5$ by $3x + 2$?

$4x + 3$ R -11

$3x+2 \overline{)12x^2+17x-5}$

$-(12x^2+8x)$

$9x - 5$

$-(9x+6)$

-11

$\frac{-11}{3x+2}$

Simplify the expression, if possible.

7. $\frac{-35x^6}{25x^2}$

$-7x^4$ / 5

8. $\frac{2x-18}{9-x}$

$2(x-9)$ / $-1(x-9)$

$\frac{2}{-1} = -2$

9. $\frac{2x^2-x-15}{x^2+x-12}$

$*AC$: $2 \cdot -15 = -30$; $+B$: -1; $+ *$; $-6 \& 5$

$(2x^2-6x)(+5x-15)$

$2x(x-3)5(x-3)$

$(2x+5)(x-3)$

$(2x+5)(x-3)$ / $(x+4)(x-3)$

$\frac{2x+5}{x+4}$

10. $\frac{x^2-3x-10}{x^2-9x+20}$

$(x-5)(x+2)$ / $(x-5)(x-4)$

11. $\frac{2x+9}{4x-3}$

simplified

12. $\frac{x^2-16}{\frac{x-4}{-2(x+4)}}$ A, B, C

$\frac{x^2-16}{x-4} \cdot \frac{1}{-2(x+4)}$

$\frac{(x+4)(x-4)}{x-4} \cdot \frac{1}{-2(x+4)}$

$\frac{-1}{2}$

Find the product or quotient.

13. $\frac{18x^4}{25x^2} \cdot \frac{50x^5}{27x^8} = \frac{900x^9}{675x^{10}}$

$= \frac{4}{3x}$

14. $\frac{20}{x^3} \div \frac{30}{x^5} = \frac{20}{x^3} \cdot \frac{x^5}{30}$

$= \frac{20x^5}{30x^3} = \frac{2x^2}{3}$

$\frac{-11}{3x+2}$	$\frac{-7x^4}{5}$	-2	$-\frac{1}{2}$	$\frac{x+2}{x-4}$	$\frac{2x^2}{3}$	$\frac{2x+5}{x+4}$	$\frac{2x+9}{4x-3}$	$\frac{4}{3x}$

Find the product or quotient.

15. $\frac{4x^3+6x^2}{20x^4-8x^3} \div \frac{2x^2+3x}{45x-18}$

$\frac{2x^2(2x+3)}{4x^3(5x-2)} \cdot \frac{9(5x-2)}{x(2x+3)}$

$= \frac{18x^2}{4x^3} = \boxed{\frac{9}{2x}}$

16. $\frac{x^2-2x-8}{x^2+5x+6} \cdot \frac{x^2+2x-3}{x^2-8x+7}$

$\frac{(x-4)(x+2)}{(x+2)(x+3)} \cdot \frac{(x+3)(x-1)}{(x-7)(x-1)}$

$\boxed{\frac{x-4}{x-7}}$

15. $\frac{9}{2x}$

16. $\frac{x-4}{x-7}$

Solve the equation.

17. $\frac{-5}{x+6} = \frac{-2}{x}$

$-5x = -2(x+6)$

$-5x = -2x - 12$

$+2x \quad +2x$

$\frac{-3x}{-3} = \frac{-12}{-3}$

$\boxed{x = 4}$

18. $\frac{x}{x-1} = \frac{-14}{x-9}$

$x(x-9) = -14(x-1)$

$x^2 - 9x = -14x + 14$

$+14x \quad +14x$

$x^2 + 5x = 14$

$-14 \quad -14$

$x^2 + 5x - 14 = 0$

$(x+7)(x-2) = 0$

$x+7=0 \quad x-2=0$

$-7 \quad -7 \quad +2 \quad +2$

$\boxed{x = -7 \quad x = 2}$

19. $\frac{3x}{2} = \frac{6}{x+3}$

$3x(x+3) = 12$

$3x^2 + 9x = 12$

$\frac{3x^2}{3} + \frac{9x}{3} - \frac{12}{3} = \frac{0}{3}$

$x^2 + 3x - 4 = 0 \quad (x+4)(x-1) = 0 \Rightarrow x+4=0 \quad x-1=0$

$x = -4 \quad x = 1$

17. $x = 4$

18. $x = 2$ & -7

19. $x = -4$ & 1

20. You have an 8 pint mixture of paint that is made up of equal amounts of yellow paint and blue paint. To create a certain shade of green, you need a paint mixture that is 80% yellow. How many pints of yellow paint do you need to add to the mixture? *You must set up an equation and solve.*

total 8 : 4 yellow + 4 blue

$= 0.8$

$\frac{\text{yellow}}{\text{total}} : \frac{4+x}{8+x} = \frac{0.8}{1}$

$1(4+x) = 0.8(8+x)$

$4 + x = 6.4 + 0.8x$

$-0.8x \quad -0.8x$

$4 + 0.2x = 6.4$

$-4 \quad -4$

$0.2x = 2.4$

$\frac{0.2x}{0.2} = \frac{2.4}{0.2}$

$\boxed{x = 12}$

20. 12 pints

-7 and 2	-4 and 1	4	$\frac{9}{2x^2}$	$\frac{x-4}{x-7}$	12