Honors 1

Name:____________________

Chapter 11 Practice TEST – Use a separate piece of paper if necessary.

1. If y = 4 when x = 1,

a) write the inverse variation equation.

$y = \frac{K}{x}$

$4 = \frac{K}{1}$, $K = 4$

$\boxed{y = \frac{4}{x}}$

b) find the value of x when y = 10.

$10 = \frac{4}{x}$, $x = \frac{4}{10} = \boxed{\frac{2}{5}}$

2. Identify the asymptotes of $y = \frac{-4}{x+7} - 2$.

Vertical Asymptote: $x = -7$

Horizontal Asymptote: $y = -2$

3. Identify the asymptotes of $y = \frac{4}{3x-15} + 1$.

$3x - 15 = 0$, $x = 5$

Vertical Asymptote: $x = 5$

Horizontal Asymptote: $y = 1$

4. Describe in words how the graph of *g(x)* would compare to *f(x)*.

$g(x) = \frac{1}{x + 5/2} - 2$

$f(x) = \frac{1}{x}$

Shifted left 2.5 and down 2

5. Speed and distance are inversely proportional. If a trip takes 3.5 hours going 60 mph, how long will it take going 70 mph?

$\frac{3.5}{x} = \frac{70}{60}$

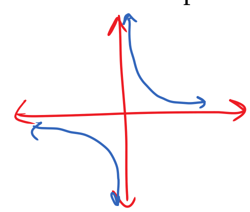
$210 = 70x$

$3 = x$

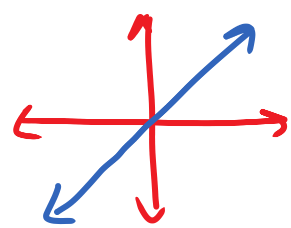
$\boxed{3 \text{ hrs}}$

6. Sketch a graph that has an

a) inverse relationship



b) direct relationship.



7. Simplify $\frac{k^2+2k-15}{k^2-4k+3}$. State the excluded values.

$\frac{(K+5)\cancel{(K-3)}}{(K-1)\cancel{(K-3)}}$

Simplified Form: $\frac{K+5}{K-1}$

Excluded value(s): $K = 1$, $K = 3$

8. Simplify and state the x-intercept(s).

$$f(x) = \frac{x^2+9x+18}{(x+6)}$$

$= \frac{\cancel{(x+6)}(x+3)}{\cancel{(x+6)}}$

$= x + 3$

Simplified Form: $f(x) = x + 3$

X-intercept(s): $x = -3$

Find each product or quotient (simplify first).

9. $\frac{r^2+2r-3}{r^2+5r+6} \cdot \frac{r+2}{r^2-1}$

$\frac{\cancel{(r+3)}\cancel{(r-1)}}{\cancel{(r+3)}\cancel{(r+2)}} \cdot \frac{\cancel{(r+2)}}{(r+1)\cancel{(r-1)}} = \boxed{\frac{1}{r+1}}$

10. $\dfrac{\frac{3x+3}{5x^2-5x-10}}{\frac{x-2}{15}}$

$\frac{3(x+1)}{\cancel{15}\,1\,\cancel{5}(x^2-x-2)} \cdot \frac{\cancel{15}\;3}{x-2}$

$\frac{3\cancel{(x+1)}}{\cancel{(x+1)}(x-2)} \cdot \frac{3}{(x-2)} = \boxed{\frac{9}{(x-2)^2}}$

Simplify each expression.

11. Divide by long division.
$(4x^2+17x+1) \div (4x+1)$

$$
\begin{array}{r|l}
 & x + 4 - \frac{3}{4x+1} \\
4x+1 & 4x^2+17x+1 \\
 & -\;4x^2+1x \\
 & \quad 16x+1 \\
 & -\;16x+4 \\
 & \quad -3
\end{array}
$$

$\boxed{x+4+\frac{-3}{4x+1}}$

12. $\frac{4t-5}{t+6} + \frac{5t+3}{t+6}$

$\frac{4t-5+5t+3}{t+6} = \boxed{\frac{9t-2}{t+6}}$

13. $\frac{3v-6}{v^2-4v+4} + \frac{1}{v-2}$

$\frac{3(v-2)}{(v-2)(v-2)} + \frac{1}{v-2}\cdot\frac{(v-2)}{(v-2)}$

$\frac{3v-6}{(v-2)(v-2)} + \frac{v-2}{(v-2)(v-2)} = \frac{4v-8}{(v-2)(v-2)} = \frac{4\cancel{(v-2)}}{(v-2)\cancel{(v-2)}}$

$= \boxed{\frac{4}{v-2}}$

14. $\frac{5n}{5n-4} + \frac{2n-3}{4-5n}$

$\frac{5n}{5n-4} + \frac{2n-3}{-1(5n-4)}$

$\frac{5n}{5n-4} - \frac{2n-3}{5n-4} = \boxed{\frac{3n+3}{5n-4}}$

15. Given the formula $\frac{1}{R_T} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3}$ for the resistance of a circuit, determine the resistance R_3 if R_T = 4 ohms, R_1 = 6 ohms, and R_2 = 3 ohms.

$\frac{1}{4} = \frac{1}{6} + \frac{1}{3} + \frac{1}{R_3} \rightarrow \frac{1}{4} = \frac{1}{6} + \frac{2}{6} + \frac{1}{R_3}$

$\frac{1}{4} = \frac{1}{2} + \frac{1}{R_3}$

$\frac{-1}{4} = \frac{1}{R_3} \rightarrow -1 \cdot R_3 = 4$

$\boxed{R_3 = -4}$

$\boxed{-4 \text{ ohms}}$

mathematically correct, but physically not possible