Algebra 2 Day 05 Homework Name Master Eq

Graphing Rational Functions

Date________ Period____

1-4: Simplify each expression.

1) $\dfrac{x^2+17x+72}{10x+90}$

$\dfrac{(x+\cancel{9})(x+8)}{10(\cancel{x+9})}$

$\dfrac{x+8}{10}$

2) $\dfrac{1}{n-9}\cdot\dfrac{2n^3-18n^2}{5}$

$\dfrac{1}{(\cancel{n-9})}\cdot\dfrac{2n^2(\cancel{n-9})}{5} = \dfrac{2n^2}{5}$

3) $\dfrac{1}{7x-14}\div\dfrac{x+1}{6x^3+6x^2}$

$\dfrac{1}{7(x-2)}\div\dfrac{(x+1)}{6x^2(x+1)}$

$\dfrac{1}{7(x-2)}\cdot\dfrac{6x^2(\cancel{x+1})}{(\cancel{x+1})} = \dfrac{6x^2}{7(x-2)}$

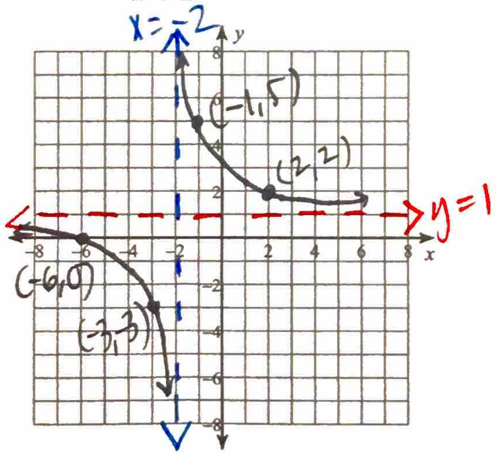
4) $\dfrac{y\cdot 6x}{y\cdot 2}+\dfrac{2x}{2y}$

LCD $=2y$

$\dfrac{6xy}{2y}+\dfrac{2x}{2y}=\dfrac{6xy+2x}{2y}=\dfrac{\cancel{2}x(6y+1)}{\cancel{2}y}=\dfrac{x(6y+1)}{y}$

5-10: Identify the vertical asymptotes, horizontal asymptote, domain, and range of each. Then sketch the graph.

5) $f(x)=\dfrac{4}{x+2}+1$



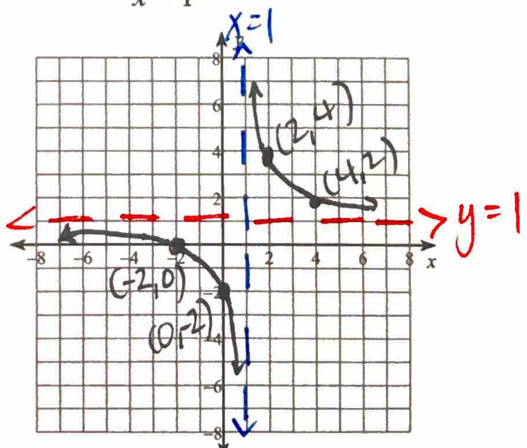
V.A.: $x=-2$

H.A.: $y=1$

D: $(-\infty,-2)\cup(-2,\infty)$ or $\mathbb{R}, x\neq -2$

R: $(-\infty,1)\cup(1,\infty)$ or $\mathbb{R}, y\neq 1$

6) $f(x)=\dfrac{3}{x-1}+1$



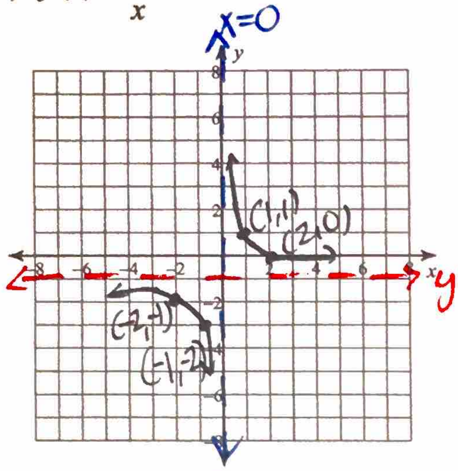
V.A.: $x=1$

H.A.: $y=1$

D: $(-\infty,1)\cup(1,\infty)$ or $\mathbb{R}, x\neq 1$

R: $(-\infty,1)\cup(1,\infty)$ or $\mathbb{R}, y\neq 1$

7) $f(x) = \frac{2}{x} - 1$



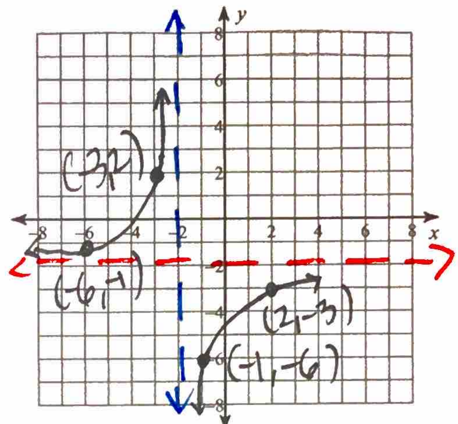
V.A.: $x=0$

H.A.: $y=-1$

D: $(-\infty,0)\cup(0,\infty)$ or $\mathbb{R}, x\neq 0$

R: $(-\infty,-1)\cup(-1,\infty)$ or $\mathbb{R}, y\neq -1$

8) $f(x) = -\frac{4}{x+2} - 2$



V.A.: $x=-2$

H.A.: $y=-2$

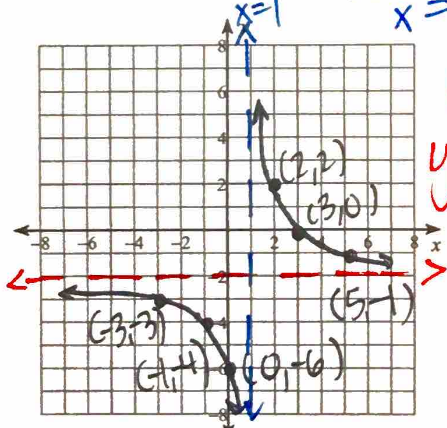
D: $(-\infty,-2)\cup(-2,\infty)$ or $\mathbb{R}, x\neq -2$

R: $(-\infty,-2)\cup(-2,\infty)$ or $\mathbb{R}, y\neq -2$

9) $f(x) = \frac{-2x+6}{x-1}$

V.A.:
$x-1=0$
$x=1$

H.A.:
$y=\frac{-2}{+1}=-2$



V.A.: $x=1$

H.A.: $y=-2$

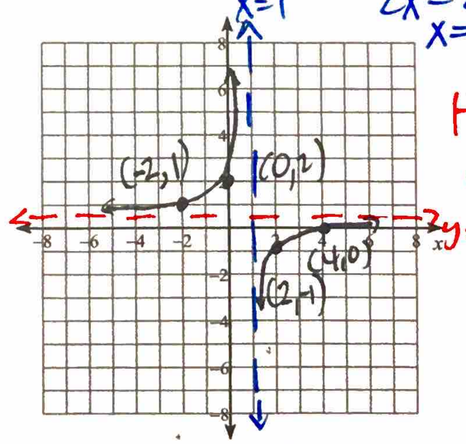
D: $(-\infty,1)\cup(1,\infty)$ or $\mathbb{R}, x\neq 1$

R: $(-\infty,-2)\cup(-2,\infty)$ or $\mathbb{R}, y\neq -2$

10) $f(x) = \frac{x-4}{2x-2}$

V.A.:
$2x-2=0$
$2x=2$
$x=1$

H.A.:
$y=\frac{1}{2}$



V.A.: $x=1$

H.A.: $y=\frac{1}{2}$

D: $(-\infty,1)\cup(1,\infty)$ or $\mathbb{R}, x\neq 1$

R: $(-\infty,\frac{1}{2})\cup(\frac{1}{2},\infty)$ or $\mathbb{R}, y\neq\frac{1}{2}$