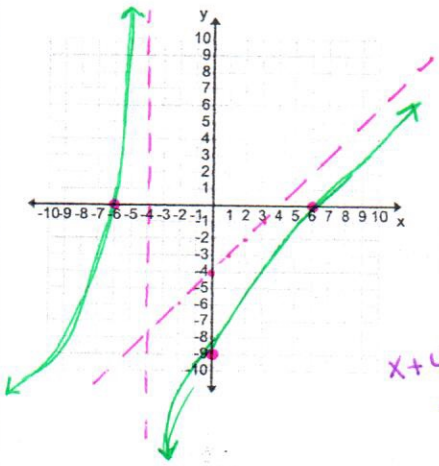
Secondary Math 3 Honors
Unit 4 Review - No Calculator

Name: key
Period: _____

Graph the following functions and find all of the critical information.

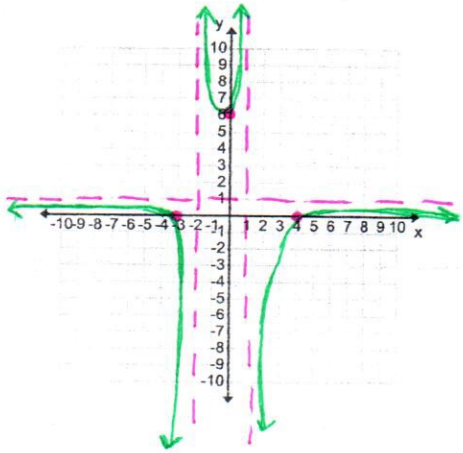
1. $y = \frac{x^2-36}{x+4} = \frac{(x+6)(x-6)}{x+4}$



D: $(-\infty, -4) \cup (-4, \infty)$
V: $x = -4$ opp
H: NONE
X: $x = 6, x = -6$ cross
Y: $y = -9$
E: $m = 2, n = 1$, $m > n$
SA@ $y = x - 4$

$$x+4 \overline{)\, x^2+0x-36}$$
$$-(x^2+4x)$$
$$-4x-36$$
$$-(-4x-16)$$
$$-20$$
$$\text{Quotient: } x-4$$

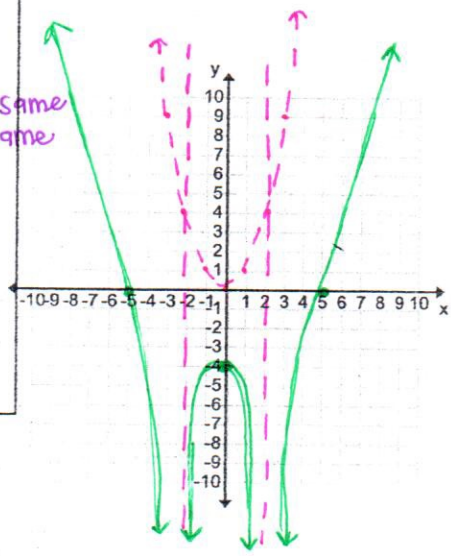
2. $y = \frac{x^2-x-12}{x^2+x-2} = \frac{(x-4)(x+3)}{(x-1)(x+2)}$



D: $(-\infty, -2) \cup (-2, 1) \cup (1, \infty)$
V: $x = -2, x = 1$ opp
H: NONE
X: $x = 4, x = -3$ cross
Y: $y = 6$
E: $m = 2, n = 2$, $m = n$
HA@ $y = 1$

3. Use the critical information to graph.

D: $(-\infty, -2) \cup (-2, 2) \cup (2, \infty)$
V: $x = 2, mult.\ 2$, same; $x = -2\ mult.\ 2$ same
H: NONE
X: (-5, 0) (5, 0) cross cross
Y: (0, -4)
E: $y = x^2$



4. Use the critical information to write the equation in factored form.

D: $(-\infty, -2) \cup (-2, -1) \cup (-1, 3) \cup (3, \infty)$
V: $x = 3, mult.\ 3,\ x = -2\ mult.\ 2$
H: (-1, 0)
X: $x = 0\ mult.\ 2, x = -1\ mult.\ 1, x = -5\ mult.\ 2$
Y: (0, 0)
E: $y = \frac{3}{4}$

$$y = \frac{3x^2(x+1)^2(x+5)^2}{4(x+1)(x-3)^3(x+2)^2}$$

5. Simplify the rational expression.

$$\frac{v^2+10v+21}{6v^2}\times\frac{1}{v+7}$$

$\frac{(v+7)(v+3)}{6v^2}\cdot\frac{1}{v+7}$

$=\boxed{\frac{v+3}{6v^2}}$ $\boxed{v\neq 0,-7}$

use lcd

6. Solve the rational expression.

$$\frac{6}{n-6}=\frac{n+5}{n^2-6n}+\frac{1}{n^2-6n}$$

ex. values $n\neq 6$, $n\neq 0$

lcd: $n(n-6)$

$n(n-6)\left(\frac{6}{n-6}\right)=n(n-6)\left(\frac{n+5}{n(n-6)}\right)+n(n-6)\left(\frac{1}{n(n-6)}\right)$

$6n=n+5+1$

$6n=n+6$

$-n\quad -n$

$5n=6$

$\frac{5n}{5}=\frac{6}{5}$

$\boxed{n=6/5}$

7. Use the graph to find all the critical information.

D: $(-\infty,-1)\cup(-1,4)\cup(4,\infty)$

V: $x=-1$, $x=4$ (same, opp)

H: NONE

X: $x=-4$, $x=3$ (cross, bounce)

Y: $y=-10$

E: HA@ $y=1$