Pre-Calculus

#12D Combo WS

Name_____ ID: 1

Date_____ Period____

Simplify:

1) $\frac{8v^2}{36v} = \frac{2v}{9}$

2) $\frac{8x^2 - 24x - 80}{x^3 - 14x^2 + 45x}$

3) $\frac{8}{4} \cdot \frac{5}{3n^3} = \frac{40}{12n^3}$

4) $\frac{n^2 + n - 6}{8n^2 - 40n} \cdot \frac{n^2 - 3n - 10}{n^2 + 5n + 6}$

5) $\frac{5}{3x^2} \div \frac{5x^2}{6x}$

$\frac{5}{3x^2} \cdot \frac{6x}{5x^2} = \frac{30x}{15x^4} = \frac{2}{x^3}$

6) $\frac{p^2 - 9p - 10}{6p^2 - 54p} \div \frac{p^2 - 15p + 50}{p^2 - 14p + 45}$

$\frac{(a+6)(a-3)}{(a+6)(a-3)}\frac{2a}{3a} + \frac{-a+3}{3a^2 + 9a - 54}$

$3(a^2+3a-18)$

$3(a+6)(a-3)$

$\frac{2(a^2+3a-18)+-a-3}{3a(a+6)(a-3)}$

$\frac{2a^2+6a-36-a-3}{3(a+6)(a-3)}$

$\frac{2a^2+5a-39}{3(a+6)(a-3)}$

7) $\frac{2}{5x-6} + \frac{4}{x+6}$

Solve each equation. Remember to check for extraneous solutions.

9) $\left(\sqrt{\frac{m}{5}}\right)^2 = \left(\sqrt{6-m}\right)^2$

$\frac{m}{5} = 6 - m$

$m = 30 - 5m$

$6m = 30$

$m = 5$ ✓

10) $\sqrt{3b-8} = b - 4$

11) $\frac{1}{2x} + \frac{5}{4} = \frac{1}{4x}$

$\frac{4x}{1}$

$2 + 5x = 1$

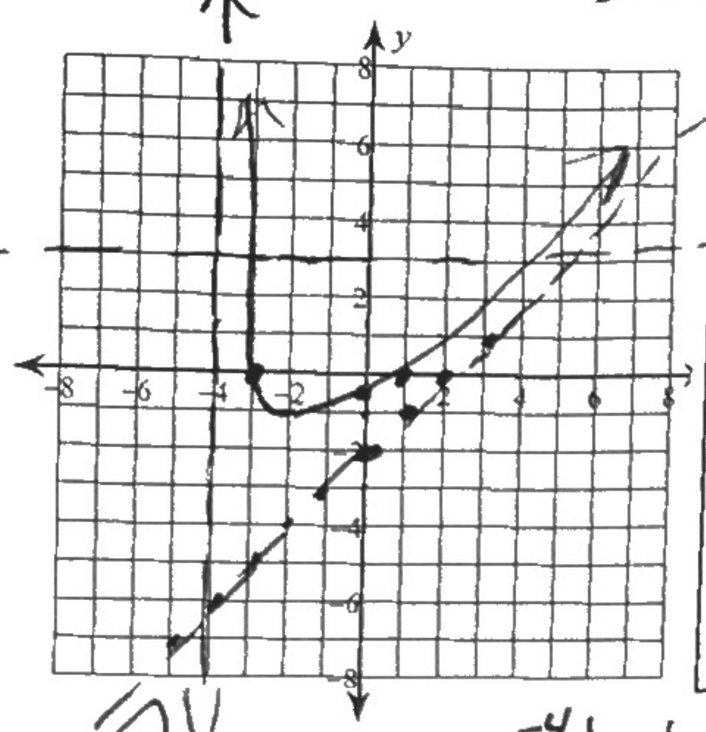
$5x = -1$

$x = -\frac{1}{5}$

12) $\frac{2}{v^2 - v - 12} = \frac{1}{v-4} + \frac{6}{v^2 - v - 12}$

Identify the points of discontinuity, holes, vertical asymptotes, x-intercepts, and horizontal asymptote of each. Then sketch the graph.

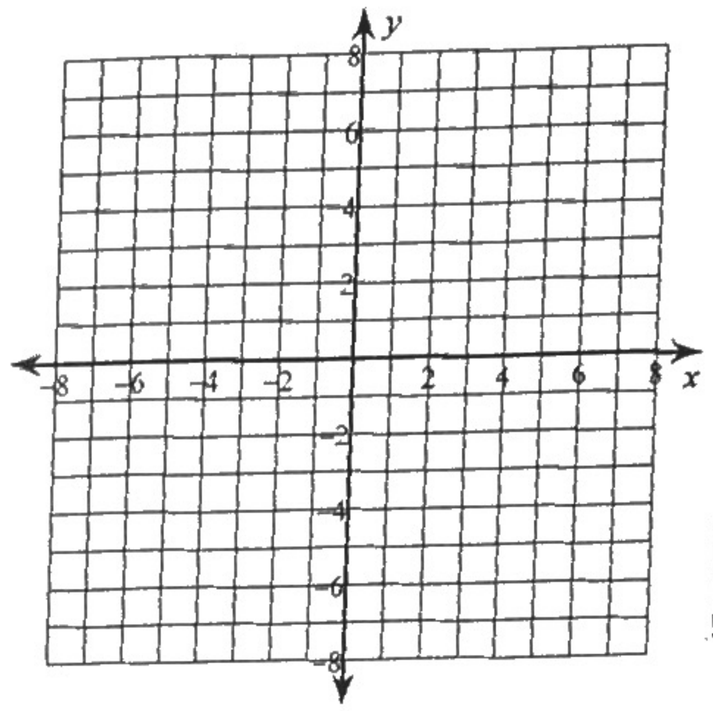
13) $f(x)=\dfrac{x^2+2x-3}{3x+12}=\dfrac{(x+3)(x-1)}{3(x+4)}$



Hole: NO
VA: $x=-4$
HA: ____
SA: ____
x-int: $-3, 1$
y-int: $-1/4$
D: $\mathbb{R}\ x\neq -4$
R: ____

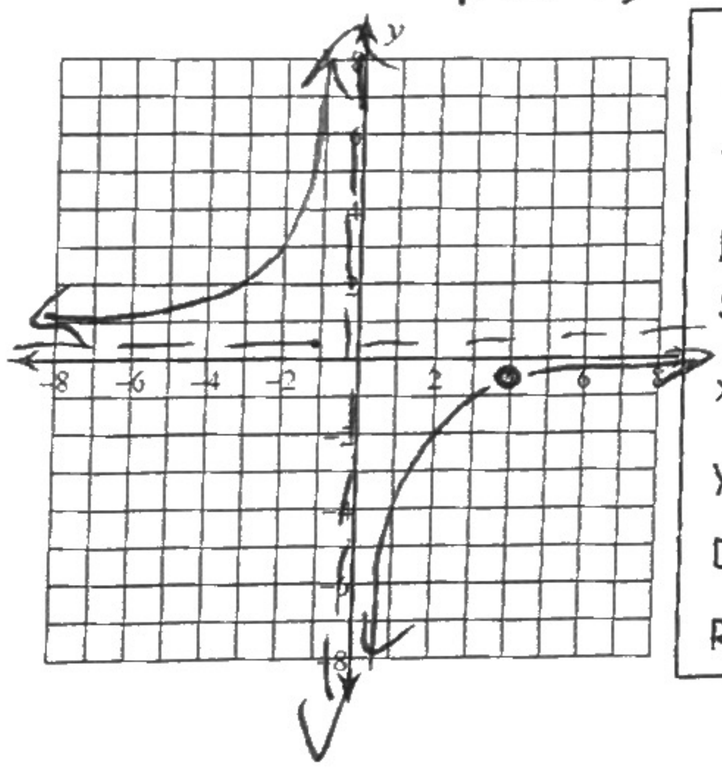
$-4 \mid 1 \quad 2 \mid -3$
$\quad\quad\ \ -4 \mid$
$\quad\quad\ \ 1 \quad -2$

14) $f(x)=\dfrac{x^3+x^2-12x}{4x^2-4x-24}$



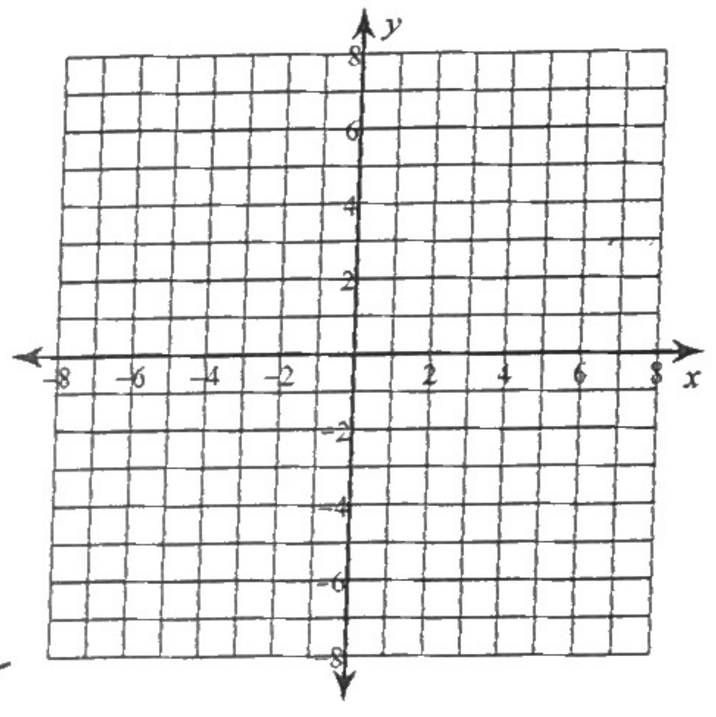
Hole: ____
VA: ____
HA: ____
SA: ____
x-int: ____
y-int: ____
D: ____
R: ____

15) $f(x)=\dfrac{-2x+8}{x^2-4x}=\dfrac{-2(x-4)}{x(x-4)}$



Hole: $(4, -\frac{1}{2})$
VA: $x=0$
HA: $y=0$
SA: NO
x-int: NO
y-int: NO
D: $\mathbb{R}: x\neq 0, 4$
R: $\mathbb{R}: y\neq 0, -\frac{1}{2}$

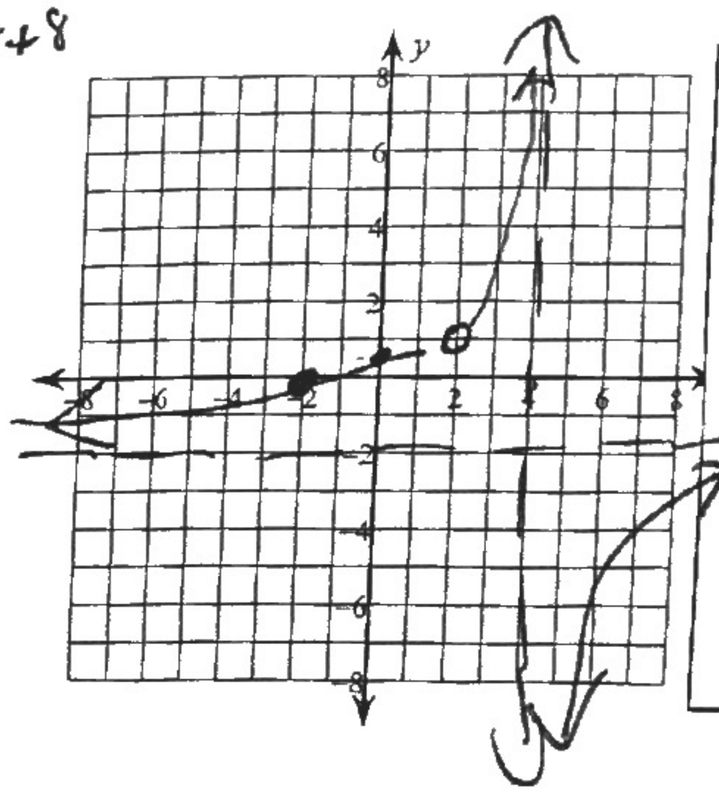
16) $f(x)=\dfrac{-2x+6}{x-1}$



Hole: ____
VA: ____
HA: ____
SA: ____
x-int: ____
y-int: ____
D: ____
R: ____

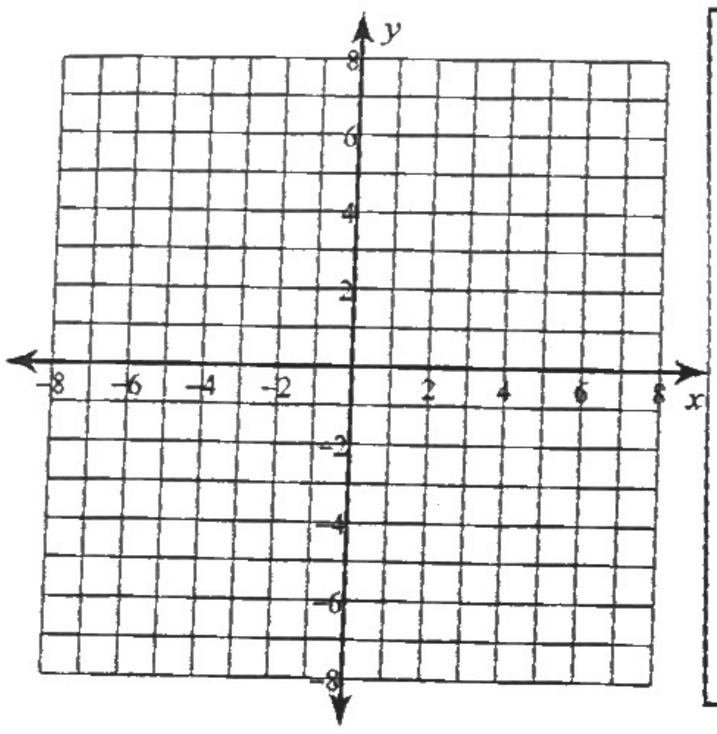
17) $f(x)=\dfrac{x^2-4}{-2x^2+12x-16}=\dfrac{(x+2)(x-2)}{-2(x-2)(x-4)}$

x^2-6x+8



Hole: $(2, 1)$
VA: $x=4$
HA: $y=2$
SA: ~~DNE~~
x-int: -2
y-int: $\frac{1}{4}$
D: $\mathbb{R}\ x\neq 2, 4$
R: $\mathbb{R}\ y\neq 1, -2$

18) $f(x)=\dfrac{x^3-5x^2+4x}{2x^3-14x^2+24x}$



Hole: ____
VA: ____
HA: ____
SA: ____
x-int: ____
y-int: ____
D: ____
R: ____