



8. Simplify:  $\frac{(x+4)(x+1) \cdot 2(x+4)}{(x+4)(x+1)} \cdot \frac{2x+2}{x+4}$

2

9. Solve:  $\left(\frac{n}{n-4} + n = \frac{12-4n}{n-4}\right)^{n-4}$

$n = -4, 3$

$n + n^2 - 4n = 12 - 4n$   
 $n^2 - 3n = 12 - 4n$   
 $n^2 + n - 12 = 0$   
 $(n+4)(n-3) = 0$   
 $n = -4 ; n = 3$

Solve.

10.  $\frac{4x}{3x-6} < 2$

$x < 2$  or  $x > 6$

$\frac{4}{3} < 2$   
 $\frac{12}{3}$

$\frac{40}{24} \quad \frac{10}{6} \quad \frac{5}{3}$

12. Solve:  $\left(\frac{4x}{3x-2} > \frac{1}{2}\right)$  LCD:  $2(3x-2)$

$x < -2/5$  or  $x > 2/3$

C1: LCD  $(6x-4) > 0$

C2: LCD  $x < 2/3$

$6x > 4$   
 $3x > 2$   
 $x > 2/3$

$8x < 3x - 2$

$5x < -2$

or  $x < -2/5$

$x < 2/3$

$x > 2/3$

14. State the domain:  $h(x) = \frac{x-0.5}{(x+2)(x+5)}$

all Real,  $x \neq -2, -5$

15. Solve:  $4 - \frac{1}{b} < \frac{3}{b}$

$4 - \frac{1}{b} < \frac{3}{b}$   
 $4 - 2$

$0 < b < 1$

$1 \div \frac{1}{2}$   
 $1 \times 2$

16. Identify all asymptotes & holes in the

graph of:  $\frac{x^2-4}{2x^2-5x+2} \quad \frac{(x+2)(x-2)}{(2x-1)(x-2)}$

VA:  $x = \frac{1}{2}$ ; HA:  $y = \frac{1}{2}$   
 hole:  $x = 2$

17. Determine the values of x for any points

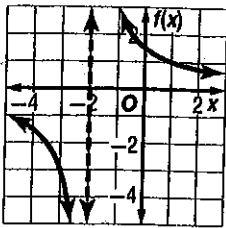
of discontinuity (holes) in the graph of:

$f(x) = \frac{x+5}{x^2+6x+5}$   
 $(x+5)(x+1)$

$x = -5$

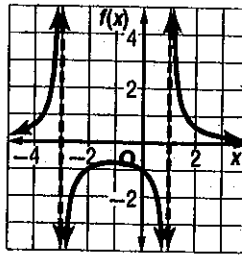
Which rational function is graphed?

8. A



- A  $f(x) = \frac{3}{x+2}$      C  $f(x) = \frac{x}{x+2}$   
 B  $f(x) = \frac{3}{x-2}$      D  $f(x) = \frac{x}{x-2}$

19. C



- A  $f(x) = \frac{x-3}{x-1}$       C  $f(x) = \frac{3}{(x+3)(x-1)}$   
 B  $f(x) = \frac{x-3}{x+1}$       D  $f(x) = \frac{3}{(x-3)(x+1)}$

Possible Essay Questions:

E1) Does the graph of  $f(x) = \frac{4x^2 - 1}{2x^2 + x - 3}$  have any asymptotes? Explain.

E2) Explain the differences in the graphs of  $f(x) = \frac{x+1}{x^2-1}$  &  $g(x) = \frac{1}{x-1}$ .

E3) Explain why you must consider two cases to solve  $\frac{x}{2x-4} > 1$ .

E4) Is  $x = 2$  a solution of  $\frac{8}{x^2-4} - \frac{x}{x-2} = \frac{3x}{x+2}$ ? Why or why not?

Word Problems for BONUS problems: (see attached) plus below **MUST SOLVE A RATIONAL EQUATION FOR CREDIT.**

- B1) A canoe can travel 50 miles upstream in the same time it can travel 75 miles downstream. If the canoe travels 3 mph slower going upstream than it travels downstream, how fast does it travel downstream?
- B2) A carpenter can build a bookcase in 2 hrs. His apprentice can build the same bookcase in 5 hrs. The apprentice starts building the bookcase and works for 1 hr. Then the carpenter joins the apprentice & they finish the job together. How long did it take them to finish working together?
- B3) A chemist has 40L of a 15% acid solution. How much should be evaporated from the solution to obtain a 20% acid solution?