

## Unit 6 Review

### Graphing Practice:

Find all asymptotes, holes, and intercepts. Graph your results. Find extra points as necessary to complete your graph. Remember, it is helpful to simplify FIRST, being mindful of any factors that may cancel out.

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

$$2. g(x) = \frac{-3x^2-12x-9}{x^2+5x+4}$$

$$3. h(x) = \frac{2x-6}{x^2-3x}$$

$$4. j(x) = \frac{x^2-5x+6}{-4x-4}$$

$$5. k(x) = \frac{2x^2+x-6}{4x+6}$$

### Simplifying:

$$6. \frac{x^2+x-6}{x^2-5x} \cdot \frac{x^2-25}{x^2+4x+3}$$

$$7. \frac{2x-8}{x^2-16} \cdot \frac{x^2+5x+4}{x^2+8x+16}$$

$$8. \frac{2-x}{x^2+2x+1} \div \frac{x^2+3x-10}{x^2-1}$$

$$9. \frac{x^2-x-2}{2x^2-5x+2} \div \frac{x^2-x-12}{2x^2+5x-3}$$

$$10. \frac{5x}{x^2-x-6} + \frac{4}{x^2+4x+4}$$

$$11. \frac{x+3}{x-2} + \frac{6x-7}{x^2-3x+2}$$

$$12. \frac{x-4}{x^2+2x-8} - \frac{x+2}{x^2-16}$$

$$13. \frac{x}{x^2+5x+6} - \frac{8}{x^2+3x}$$

### Solving:

$$14. \frac{x-1}{x^2+3x+2} + \frac{2x}{x+2} = \frac{x-1}{x+1}$$

$$15. \frac{x}{x+1} + \frac{3}{x+4} = \frac{x+3}{x+4}$$

$$16. \frac{2}{x+2} + \frac{x}{x-2} = 1$$

$$17. \frac{5}{x^2-7x+12} - \frac{2}{3-x} = \frac{5}{x-4}$$

$$18. \frac{10}{2x+8} - \frac{7x+8}{x^2-16} = \frac{-8}{2x-8}$$

$$19. \frac{15}{x} + \frac{9x-7}{x+2} = 9$$

$$20. \frac{x}{x+1} + \frac{x}{x-2} = 2$$

### Application:

21. A flight across the US takes longer east to west than it does west to east. Assume that the winds are constant in the eastward direction. When flying westward, the headwind decreases the airplane's speed. When flying eastward, the tailwind increases its speed. The time for a round trip from Chicago to San Francisco is  $7\frac{3}{4}$  h. If the airplane cruises 480 mi/h, what is the speed of the wind. \*\*Remember  $d=r*t$ , start by defining your unknown variable and deciding what you know about  $d$ ,  $r$ , and  $t$  (making a chart may help).

