

**Graphing Rational Functions**

- Describe how to find the vertical asymptotes and the zeros of a rational function.
- Describe how to find the horizontal asymptote of a rational function. k

For each of the functions below, a) State the domain, b) Find the equations of the vertical asymptotes or points of discontinuity, c) Find the equation of the horizontal asymptote, if it exists, and d) find the zeros, if they exist.

Graph 7 of the these functions from #3-22 on your own paper.

3. $y = \frac{6}{x-1}$	4. $y = \frac{-3}{x+2}$	5. $y = \frac{10}{x+7} - 5$
6. $y = \frac{11}{x-9} + 9$	7. $y = \frac{x+4}{x-3}$	8. $y = \frac{8x+3}{2x-6}$
9. $y = \frac{9x-3}{3x-1}$	10. $y = \frac{5}{x^2-1}$	11. $y = \frac{x^2-9}{x^2-2x-15}$

12. $y = \frac{x^2-7x-60}{x+3}$	13. $y = \frac{x^3+27}{3x^2+x}$	14. $y = \frac{1}{x^2}$
15. $y = \frac{3x^2+1}{x^2+x+9}$	16. $y = \frac{x^2-1}{x+1}$	17. $y = \frac{x-4}{x^2-16}$
18. $y = \frac{x^2-4}{x^2-3x+2}$	19. $y = \frac{x^2-3x-4}{2x^2+x-1}$	20. $y = \frac{2x^2-5x-3}{x^3-2x^2-x+2}$
21. $y = \frac{x^3-2x^2-x+2}{2x^2-5x-3}$	22. $y = \frac{x^2+2x-35}{x^3-4x^2+x+6}$	

23-30. Graph 7 functions from numbers 3-22 above. Use your own paper to graph.