Chapter 12 Review

Directions: Complete each of the following sets of problems.

Use the equations below to graph your own exponential and logarithmic functions.

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

Use the equations below to draw linear graphs. Use pencil and paper, not a graphing calculator, and determine the x- and y-intercepts of each graph. Your answer will be the x- and y-intercepts. You do not have to submit the graphs.

6. \( y = -2x + 1 \)
7. \( y = -3x - 6 \)
8. \( y = -2x + 1 \)

Use the equations below to draw quadratic graphs. Use pencil and paper, not a graphing calculator, and determine whether the graph has a minimum or maximum, as well as what the value is for each graph. Your answer will be the minimum and/or maximum, and the value for each graph. You do not have to submit the graphs.

9. \( y = x^2 + 2x + 4 \)
10. \( y = x^2 - 6x + 11 \)
Use the equations below to draw radical function graphs. Use pencil and paper, not a graphing calculator, and determine the domain for each set. If there is no domain limit, write “infinite.”

11. \( y = -2\sqrt{x} + 4 \)

12. \( y = -\sqrt{x-4} - 2 \)

13. \( y = 4\sqrt{x-2} - 1 \)

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

15. \( y = -2 + \frac{2}{3}x \)

Use the equations below to draw piecewise graphs. Use pencil and paper, not a graphing calculator, and determine the x- and y-intercepts of the graphs.

16. \( f(x) = \begin{cases} \sqrt{x^2}, & -3 \leq x < 0 \\ x^2, & 0 \leq x \geq 2 \end{cases} \)

17. \( f(x) = \begin{cases} 2x, & -3 \leq x < 0 \\ 1, & 0 \leq x \geq 4 \end{cases} \)

18. \( f(x) = \begin{cases} x, & 0 \leq x < 5 \\ x-1, & -2 \leq x \geq 2 \end{cases} \)

Use the equations below to determine multiplicity and end behavior of each function.

19. \( f(x) = -x^4 + 4x^3 + 2x^2 + x + 4 \)

20. \( f(x) = -x^3 + x^2 - x - 2 \)

21. \( f(x) = -x^4 - 2x^2 + x \)
Look at the graph below and determine the multiplicity and end behavior.

22.

Use the equations below to graph your own rational functions.

23. \( f(x) = \frac{-2}{x-5} \)

24. \( f(x) = \frac{3x-5}{x+9} \)

25. \( f(x) = \frac{x^2-x-12}{x-4} \)