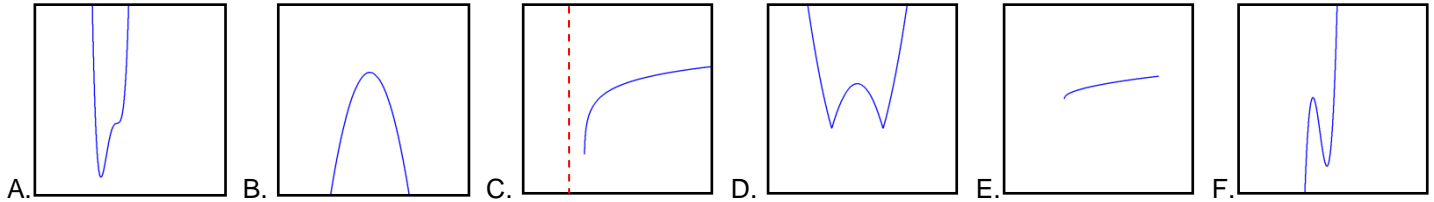
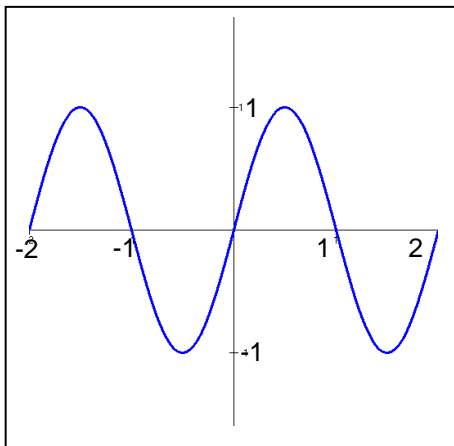


For problems 1-6, match the equation of the function with the shape of its graph below:

1. $g(x) = \ln(x+1)$ ____ 2. $g(x) = x^4 - 3x^2 + 3x - 4$ ____ 3. $g(x) = x^3 - 4x^2 - 2x$ ____
 4. $g(x) = -x^2 + 4x + 2$ ____ 5. $g(x) = \sqrt{x-1}$ ____ 6. $g(x) = |x^2 - 4x - 2|$ ____



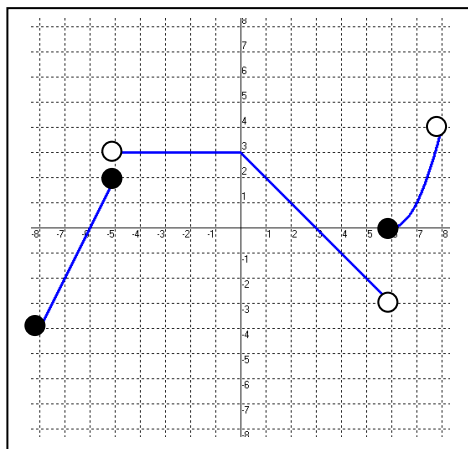
For questions 7-11, use the graph of $f(x)$ below.



This is the graph of $f(x)$.

7. On what interval(s) is $f(x)$ increasing?
 8. What is the maximum value of $f(x)$?
 9. On what interval(s) is $f(x)$ concave down?
 10. Using interval notation, state the range of $f(x)$.
 11. On what interval(s) is $f(x) < 0$?

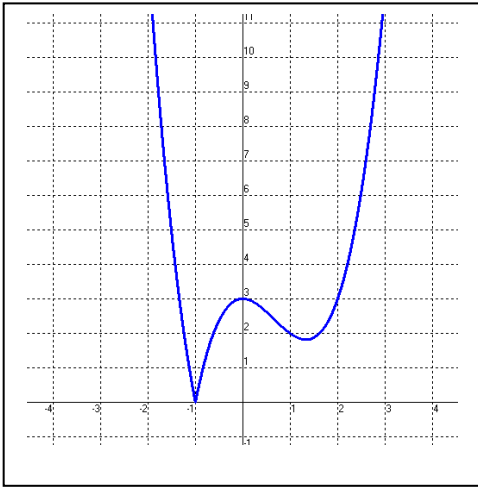
For questions 12-16, use the graph of $g(x)$ below.



This is the graph of $g(x)$.

12. On what interval(s) is $g(x)$ decreasing?
 13. Where is the minimum value of $g(x)$?
 14. On what interval(s) is $g(x)$ increasing?
 15. For what value(s) of x is $g(x) = 0$?
 16. Using interval notation, state the range of the function.

For questions 17-21, use the graph of $h(x)$ below



This is the graph of $h(x)$.

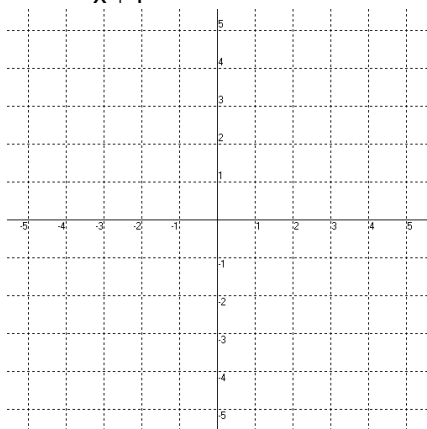
17. What is the minimum value of the function?
18. Find the x-coordinate(s) of the point(s) of inflection.
19. Find the interval(s) on which $h(x)$ is increasing.
20. Find the interval(s) on which $h(x)$ is concave up.
21. State the range of the function.

22. If the graph above is represented by $h(x) = |p(x)|$, then $p(x)$ must represent what type of function?

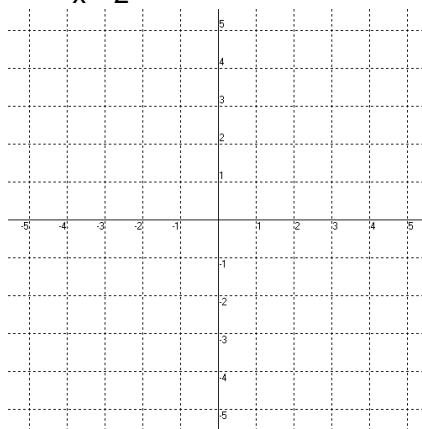
- A. quadratic B. cubic C. quartic D. natural log E. square root

For problems 35-40, sketch a graph of the function on $[-5, 5]$. Include asymptotes where appropriate.

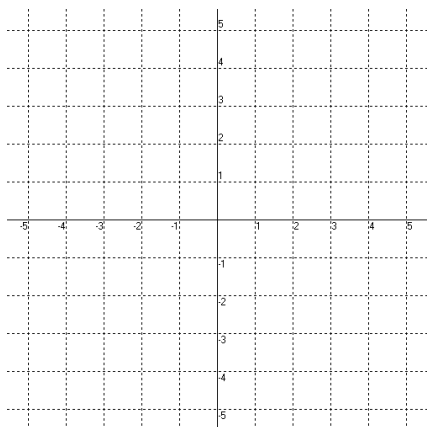
35. $f(x) = \frac{2}{x+1}$



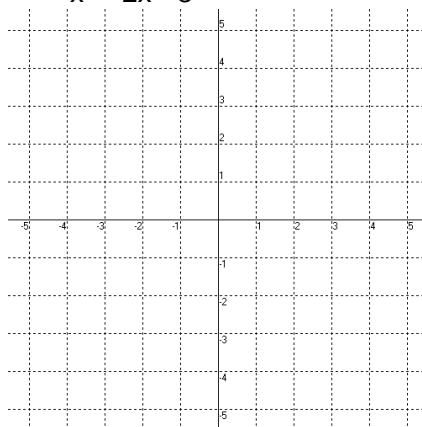
36. $f(x) = \frac{1}{x-2} + 3$



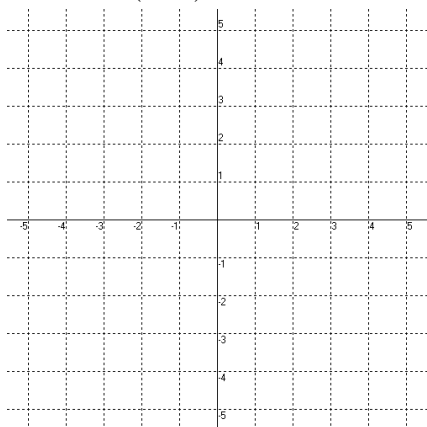
37. $f(x) = 3 + \sqrt{x-2}$



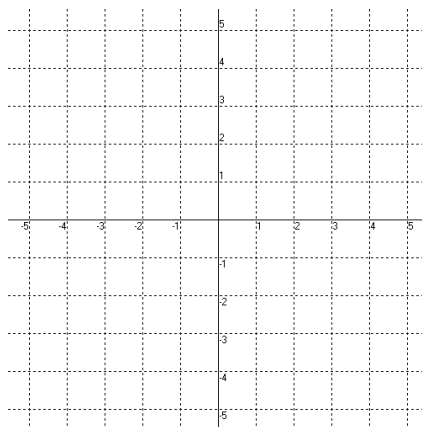
38. $f(x) = \frac{1}{x^2 - 2x - 3}$



39. $f(x) = 3 - \frac{2}{(x+1)^2}$



40. $f(x) = \ln(x+1)$



For problems 41-44, round your answer(s) to THREE DECIMAL PLACES.

41. Given the function $f(x) = x^4 - 3x^3 + x^2 + 1$:

- A. Find the zeros of the function.
- B. Find the minimum value of the function.
- C. On what interval(s) is $f(x)$ concave up?

42. Given the function $g(x) = \frac{1}{2x-3}$

- A. Using interval notation, state the domain of $g(x)$.
- B. Using interval notation, state the range of $g(x)$.
- C. On what interval(s) is $g(x)$ concave down?

43. Given the function $h(x) = \ln(x-2)$

- A. Using interval notation, state the domain of $h(x)$.
- B. Using interval notation, state the range of $h(x)$.
- C. On what interval(s) is $h(x)$ increasing?

44. Given the function $m(x) = |x^2 - 1| - 2$

- A. Where is the minimum of $m(x)$?
- B. Using interval notation, state the range of $m(x)$.
- C. Find the x-coordinate(s) of the point(s) of inflection of $m(x)$.