1. State whether each inequality is true or false
   (a) $\frac{111}{112} < \frac{11}{12}$
   (b) $-\frac{5}{6} \geq -1$.
2. Evaluate $(\frac{1}{2})^4 \cdot (\frac{5}{2})^{-2}$ and simplify completely.
3. Perform the indicated multiplication and simplify as much as possible $\frac{x^2+2x-3}{x^2+8x+16} \cdot \frac{3x+12}{x-1}$.
4. Find all real solutions to $x^2 + 5x = 24$.
5. Simplify $\left(\frac{2a^{-1}b}{a^3b^{-2}}\right)^{-4}$ and eliminate any negative exponents.
6. Find the sum, difference, or product when $17 - (5 - 8y)^2$. Simplify your answer completely.
7. Find all real solutions of $x + 5 = 14 - \frac{1}{2}x$.
8. Find an equation of the line passing through $(-3, 5)$ and perpendicular to the line $y = -\frac{1}{2}x + 2$.
9. Perform the subtraction and simplify $\frac{x^2}{x^2-4} - \frac{x+1}{x+2}$.
10. Evaluate the function $f(x) = \frac{x^2+1}{2}$ at the given values
    (a) $f(-1)$
    (b) $f(1 - a)$.
11. Sketch the graph of the function $f(x) = |x - 1| - 3$, not by plotting points, but by starting with the graph of a standard function and applying transformations.
12. Use $f(x) = 2x - 5$ and $g(x) = 3 - x^2$ to evaluate and simplify $f(f(2)) + g(g(-2))$.
13. Find the inverse function g^{-1} when $F = g(C) = \frac{9}{5}C + 32$.
14. Find the domain of the function $f(t) = \sqrt{t + 5}$. Write your answer in interval notation.
15. Sketch the graph of the function $f(x) = x^2 + 4x + 4$. Label the vertex and all intercepts on your graph.
16. The angle of elevation to the top of a building is found to be 30° from the ground at a distance 50 meters from the building. Using this information, find the height of the building.
17. Find the exact value of $\tan\left(\frac{4\pi}{3}\right)$.
18. (a) Find the radian measure of 315°
    (b) Find the degree measure of $\frac{10\pi}{3}$.
19. Find all solutions of the system of equations

$$\begin{cases} x^2 - 2y &= 19 \\ x^2 + 2y &= 31. \end{cases}$$

20. This question uses the graph of the function in Figure 1.
    (a) Determine the interval(s) on which the function is increasing.
    (b) Determine the interval(s) on which the function is decreasing.
    (c) Approximate all local maximum and minimum values as well as the value of x at which each occurs.

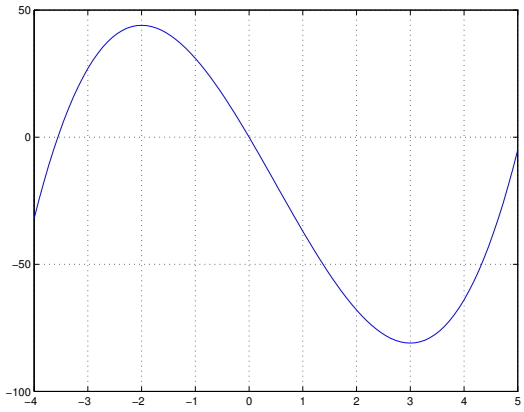

Figure 1: