1. Solve the following equations. For some of these problems, the answers are not integers. Give your answer as a decimal rounded to two decimal places.

(a) $x^2 - 1 = 15$  

(b) $\sqrt{2x} = 3$

(c) $x^2 + 2 = 7$  

(d) $2x^2 + 3 = 6$

(e) $3\sqrt{x - 1} - 2 = 10$  

(f) $2\sqrt{3x + 1} - 3 = 5$
2. A rectangle has area 48 and perimeter 28. Determine the length and width of the rectangle.

3. A circle has circumference 20. What is the area of the circle?

4. In the following triangle, $b = 6$ and $c = 10$. Determine the value of $a$. 

   \[ \begin{array}{c}
   a \\
   b \\
   c \\
   \end{array} \]
5. The length of a rectangular sign is 3 feet longer than the width. If the sign’s area is 54 square feet, find its length and width.

6. Each side of a square is lengthened by 3 inches. The area of this new, larger square is 64 square inches. Find the length of a side of the original square.
7. Multiply the following polynomials, and then simplify your answer.

(a) \((x - 1)(2x - 4)\) 
(b) \((x - 1)(x + 5)\)

(c) \((x + 3)^2\) 
(d) \((x^2 + 2x)(3x^2 + 4)\)

(e) \((2x + 3y)(x - y)\) 
(f) \((x - 3)(x^2 + 3x + 1)\)

(g) \((x + 1)(x - 1)(x + 4)\) 
(h) \((x - 2)^3\)
8. Solve the following equations:

(a) \((x - 3)(x + 4) = 0\)  \hspace{1cm} (b) \((x + 5)(3x - 9) = 0\)

(c) \(x^2 - 8x - 20 = 0\)  \hspace{1cm} (d) \(x^2 - 7x + 10 = 0\)

(e) \(x^2 - 7x = 0\)  \hspace{1cm} (f) \(x^2 - 16 = 0\)

(g) \(x^2 - x = 6\)  \hspace{1cm} (h) \(x^2 = 5x - 6\)
9. Find all solutions to the following equation:

\[(\sqrt{x} + 1)^2 = x + 7\]