1. Find the equation of the line passing through \( P (-3, 4) \) and parallel to \( y + 2x = 4 \).

Given line has slope \(-2 (y = -2x + 4)\). Parallel lines have same slope, so \( L \) has slope 2. Given it goes through \( P \), so equation is \( y - 4 = -2(x + 3) \) or \( y = -2x - 2 \).

2. Sketch the graphs of the following functions.

(a) \( f (x) = 2\sqrt{x+1} \)

This is top half of right facing parabola, shifted one unit to the left, and scaled with a 2. \( y-int. \) is given by \( f (0) = 2 \)

(b) \( f (x) = |9 - x^2| \)

This is a downward facing parabola, \( V (0, 9) \) and \( x-ints. \) \((-3, 0) \) and \((3, 0) \). Absolute value "flips" the negative tails up.

3. Find the vertex and intercepts of \( f = x^2 - 6x - 7 \). Sketch the graph of \( f \).

\[
\begin{align*}
   f (x) + 9 &= (x^2 - 6x + 9) - 7 = (x - 3)^2 - 7 \\
   f (x) &= (x - 3)^2 - 16. \ V (3, -16). \ f (0) = -7 \ y-int \ (0, -7). \ f (x) &= x^2 - 6x - 7 = (x + 1)(x - 7) = 0 \\
   x-ints. \ (-1, 0) \ and \ (7, 0) .
\end{align*}
\]