4. Find the equation of the quadratic function \( y = f(x) \) that has vertex at \( V(2,0) \) and passing through the point \( P(4,3) \). (Hint: Start the standard form for a quadratic function.)

\[
\text{Ans: } \hfill
\]

5. Use the vertex formula to find the \( x \)-coordinate, \( h \), and the \( y \)-coordinate, \( k \), of the quadratic function \( f(x) = 2x^2 - 8x + 5 \).

\[
\begin{align*}
  h &= \hfill \\
  k &= \hfill 
\end{align*}
\]

6. (3 pts) The function \( f(x) = x^2 - x + 1 \) has a \( \underline{\text{max/min}} \) at \( x = \underline{\text{}} \).

7. For a polynomial of degree 12, according to theory, the maximum number of zeros is \( \underline{\text{}} \), and the maximum number of turning points is \( \underline{\text{}} \).

8. Define \( f(x) = -2x^2(x + 1) \). Make a good sketch of the graph in the coordinate plane below, taking into consideration the end-behavior of the polynomial, and its intercepts.

\[
\text{Work Area}
\]