We know from the information given that $f$ is increasing on $(-2, 0)$ and on $(2, \infty)$. It is decreasing on $(-\infty, -2)$ and on $(0, 2)$. So a very rough sketch showing the general direction of the graph of $f$ would be

```
\begin{center}
\begin{tikzpicture}
  \draw[->] (-3.5,0) -- (3.5,0) node[right] {$x$};
  \draw[->] (0,-4) -- (0,4) node[above] {$y$};
  \draw (0,0) -- (2,0);
  \draw (0,0) -- (-2,0);
  \draw (0,0) .. controls (0,1) and (1,2) .. (2,0);
  \draw (0,0) .. controls (0,-1) and (-1,-2) .. (-2,0);
\end{tikzpicture}
\end{center}
```

Now $f''(0)$ is undefined, which means that the graph of $f$ comes to a sharp point at $x=0$. Since $f''(\pm 2) = 0$, the graph has a typical rounded local minimum at both points.