For the function $f$ whose graph is

\[
\begin{array}{c}
z \\
y \\
x \\
\end{array}
\]

\[P\]

\[
\begin{array}{c}
\text{determine the sign of } f_x \text{ and } f_y \text{ at } P. \end{array}
\]

1. $f_x < 0$, $f_y = 0$ correct
2. $f_x < 0$, $f_y > 0$
3. $f_x = 0$, $f_y = 0$
4. $f_x = 0$, $f_y > 0$
5. $f_x > 0$, $f_y < 0$
6. $f_x > 0$, $f_y < 0$

**Explanation:**
The partial derivative $f_x$ gives the slope of the graph in the direction of increasing $x$, while $f_y$ gives the slope in the direction of increasing $y$. But at $P$ the graph slopes down in the positive $x$-direction, while the graph is horizontal in the $y$-direction. Consequently,

\[ f_x < 0, \quad f_y = 0. \]