The function

$$f(x, y) = xy(1 - 8x - 9y)$$

has 4 critical points. List them and select the type of critical point. Points should be entered as ordered pairs and listed in increasing lexicographic order. By that we mean that (x, y) comes before (z, w) if $x < z$ or if $x = z$ and $y < w$.

First point [   ] of type [?   ]

Second point [   ] of type [?   ]

Third point [   ] of type [?   ]

Fourth point [   ] of type [?   ]

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First point $(0, 0)$ of type   Saddle

Second point $(0, 1/9)$ of type   Saddle

Third point $(1/24, 1/27)$ of type   Maximum

Fourth point $(1/8, 0)$ of type   Saddle