

$f(x, y) = x^3y + 24x^2 - 8y \Rightarrow f_x = 3x^2y + 48x$,
 $f_y = x^3 - 8$, $f_{xx} = 6xy + 48$, $f_{xy} = 3x^2$, $f_{yy} = 0$.
 Then $f_y = 0$ implies $x = 2$, and substitution into $f_x = 0$ gives
 $12y + 96 = 0 \Rightarrow y = -8$. Thus, the only critical point is $(2, -8)$.
 $D(2, -8) = (-48)(0) - 12^2 = -144 < 0$, so $(2, -8)$ is a saddle point.

