6.

Solution

Quadratic function: is a function that can be written in the form:

$d(j)=aj^2+bj+c$ where a, b, and c are real numbers and $a\neq 0$

we have $d(j)=-2j^2+13j-9$, note: $-2j^2+13j-9$ is in jd-plane

Here, we know that $a=-2$, $b=13$, $c=-9$

Since $a<0$,we know that the d-coordinate of the vertex is a maximum.However,to find the d-coordinate of our vertex we first need to find the j-coordinate of the vertex by using $j=-\frac{b}{2a}=-\frac{13}{-4}=\frac{13}{4}$ Now that we have the j-coordinate, we can find the d-coordinate of the vertex by finding $d\left(\frac{13}{4}\right)=-2\left(\frac{13}{4}\right)^2+13\left(\frac{13}{4}\right)-9=-\frac{169}{8}+\frac{169}{4}-9=\frac{97}{8}$ Maximum$=\frac{97}{8}$