4.

Solution

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

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

we have $s(j)=-j^2+2j-22$, note: $-j^2+2j-22$ is in js-plane

Here, we know that $a=-1$, $b=2$, $c=-22$

Since $a<0$,we know that the s-coordinate of the vertex is a maximum.However,to find the s-coordinate of our vertex we first need to find the j-coordinate of the vertex by using $j=-\frac{b}{2a}=-\frac{2}{-2}=1$ Now that we have the j-coordinate, we can find the s-coordinate

of the vertex by finding $s(1)=-1(1)^2+2(1)-22=-1+2-22=-21$ Maximum=-21