4.

Solution

To find the vertex, we look at the coefficients in the function $t(k)=ak^2+bk+c$
in this equation, $a=1$ and $b=6$
The first coordinate of the vertex has the formula: $\frac{-b}{2a}$ now, plugging into formula to get:
$\frac{-b}{2a}=-\frac{6}{2(1)}=-3$
The second coordinate of the vertex is $t(-3)=1(-3)^2+6(-3)-6$
$=-15$
Therefore, the vertex of the graph of f is $(-3,-15)$