4.

Solution

To find the vertex, we look at the coefficients in the function $t(d)=ad^2+bd+c$
in this equation, $a=1$ and $b=8$
The first coordinate of the vertex has the formula: $\frac{-b}{2a}$ now, plugging into formula to get:
$\frac{-b}{2a}=-\frac{8}{2(1)}=-4$
The second coordinate of the vertex is $t(-4)=1(-4)^2+8(-4)-3$
$=-19$
Therefore, the vertex of the graph of f is $(-4,-19)$