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Solution:

The graph of the function passes $(1,-3),(0,-2),(1,-2)$.

Let the function is $y=a(x-h)^2+k$.

Since $(1,-3)$ is the vertex of the graph, the equation is $y=a(x-1)^2+(-3)$.

$y=a(x-1)^2-3$

Since the graph of the function passes $(0,-2)$. This fact means

$y=a(x-1)^2-3$

$y=-2, x=0$

So

$-2=a(0-1)^2-3$

$-2=a(1)^2-3$

$-2=a-3$

$a-3=-2$

$a=-2+3$

$a=1$

Thus the equation is

$y=(x-1)^2-3$