## Question 32899

Let the initial y-component be $h$ .
For accelerated motion, velocity is $v=v_0+at$ . There is no horizontal acceleration (only vertical acceleration $g=9.81\frac{m}{s^2}$ according to gravity). Initial velocity $v_0=v_{0x}$ only has horizontal component.
Therefore, $v_x=v_0$ , $v_y=-gt$ .

Integrating previous two equations, obtain: $x(t)=v_0t\,;\,y(t)=h-\frac{gt^2}{2}$ .
In order to obtain path in usual form $y=y(x)$ , exclude $t$ from $y(t)$ by expressing it from $x(t)$ ( $t=\frac{x(t)}{v_0}$ ):
$y(x)=h-\frac{gx^2}{2v_0^2}$ - this is the equation for the path of a projectile fired parallel to horizontal.