

## Model Card

**Learning Target:** Produce the inverse function of a given original function by solving for  $x$ .

Work/ Process	Reasoning/Justification
<p>Original function: <math>g(x) = (x-5)^2 + 7</math></p>	<p>Solving for <math>x</math> to flip the equation "inside out". Subtract 7 to both sides because that is the inverse operation of "+7"</p>
$g(x) = (x-5)^2 + 7$ $\begin{array}{r} \xrightarrow{-7} \qquad \qquad \qquad \xrightarrow{+7} \\ \hline \sqrt{g(x)-7} = \sqrt{(x-5)^2} \end{array}$	<p>Take the square root of both sides to "undo" the squared exponent. (b/c square is the inverse of squared) <math>\sqrt{\text{root}}</math> <math>x^2</math></p>
$\sqrt{g(x)-7} = x-5$ $\begin{array}{r} \xrightarrow{+5} \qquad \qquad \qquad \xrightarrow{+5} \\ \hline \sqrt{g(x)-7} + 5 = x \end{array}$	<p>Add 5 to both sides b/c that is the inverse of "-5" +5 will stay outside the radical because I added after the square root.</p>
$g^{-1}(x) = \sqrt{x-7} + 5$	<p>rewrite the final expression using inverse notation.</p>