

LET $f(x) = x^2$ AND $g(x) = -(x-4)^2 + 5$, DESCRIBE $g(x)$ IN RELATION WITH $f(x)$

- 1) PARENT FUNCTION x^2
- 2) HORIZONTAL shift 4 units right $(x-4)^2$
- 3) REFLEXION OVER X-axis $-(x-4)^2$
- 4) VERTICAL shift 5 units up $-(x-4)^2 + 5$

FIND THE FUNCTION STARTED WITH $y = \sqrt{x}$ AFTER THE FOLLOWING TRANSFORMATIONS ARE APPLIED

- 1) Reflected about x-axis $\Rightarrow -\sqrt{x}$
- 2) Shift right 3 units $\Rightarrow -\sqrt{x-3}$
- 3) shift down 2 units $\Rightarrow -\sqrt{x-3} - 2$

FIND THE FUNCTION STARTED WITH $y = x^3$ AFTER THE FOLLOWING TRANSFORMATIONS ARE APPLIED

- 1) Reflexion about y-axis $(-x)^3$
- 2) Horizontal shift 4 units right $(-(x-4))^3 = (-x+4)^3$
- 3) vertical shift 1 unit down $(-x+4)^3 - 1$

GRAPH THE FUNCTION USING TRANSFORMATIONS

$$y = 2|1-x| + 2 \Leftrightarrow 2|-x+1| + 2$$

$$\Leftrightarrow 2|-(x-1)| + 2$$

- 1) Parent function $|x|$
- 2) Reflexion over y-axis
(not visible because is symmetric over y-axis)
- 3) Vertical stretch by 2
- 4) Horizontal shift 1 unit right
- 5) Vertical shift 2 units up

