The method: Transformations

Right h: replace x with (x − h). Left h: replace x with (x + h). Up k: add k. Reflect over the x-axis: multiply by −1. Stretch by a: multiply by a.

$f(x) = |x|$; reflect, stretch by 2, left 4, up 1 → $g(x) = -2|x + 4| + 1$

left 4: x becomes $(x + 4)$

reflect and stretch: multiply by -2

up 1: add 1

$g(x) = -2|x + 4| + 1$

$f(x) = x^2$; left 4, up 4 → $g(x) = (x + 4)^2 + 4$

left 4: x becomes $(x + 4)$

up 4: add 4

$g(x) = (x + 4)^2 + 4$

$f(x) = x^3$; right 1, up 6 → $g(x) = (x - 1)^3 + 6$

right 1: x becomes $(x - 1)$

up 6: add 6

$g(x) = (x - 1)^3 + 6$

Problems 1 and 2 worked out · Version 0A

$f(x) = |x|$; left 5, down 7 → $g(x) = |x + 5| - 7$

left 5: x becomes $(x + 5)$

down 7: subtract 7

$g(x) = |x + 5| - 7$

$f(x) = x^2$; left 6, up 6 → $g(x) = (x + 6)^2 + 6$

left 6: x becomes $(x + 6)$

up 6: add 6

$g(x) = (x + 6)^2 + 6$

Transformations · Version 0A

1) $g(x) = |x + 5| - 7$ 2) $g(x) = (x + 6)^2 + 6$

3) $g(x) = |x - 1| + 2$ 4) $g(x) = 3(x + 2)^3 + 9$

5) $g(x) = (x + 1)^3 + 1$ 6) $g(x) = 2\sqrt{x + 5} + 4$

7) $g(x) = 3\sqrt{x - 3} - 3$ 8) $g(x) = 3(x + 6)^2 - 6$

9) $g(x) = |x + 4| - 2$ 10) $g(x) = (x - 1)^2 + 9$

Answer key

11) $g(x) = 2|x - 6| + 3$ 12) $g(x) = -\sqrt{x} - 1$

13) $g(x) = -2\sqrt{x + 2} + 8$