

* #6, see page 2 for easier option

Inverse Functions - Practice

name Key

Find the inverse of each function.

1) $h(x) = \sqrt[3]{x} - 3$ $x = \sqrt[3]{y} - 3$
 $x + 3 = \sqrt[3]{y}$
 $(x+3)^3 = y$

2) $g(x) = \frac{1}{x} - 2$ $x = \frac{1}{y} - 2$
 $x + 2 = \frac{1}{y}$
 $y(x+2) = 1$
 $y = \frac{1}{x+2}$

3) $h(x) = 2x^3 + 3$
 $x = 2y^3 + 3$
 $x - 3 = 2y^3$
 $\frac{x-3}{2} = y^3$
 $\sqrt[3]{\frac{x-3}{2}} = y$

4) $g(x) = -4x + 1$
 $x = -4y + 1$ $y = \frac{x-1}{-4} = -\frac{1}{4}x + \frac{1}{4}$
 $x - 1 = -4y$

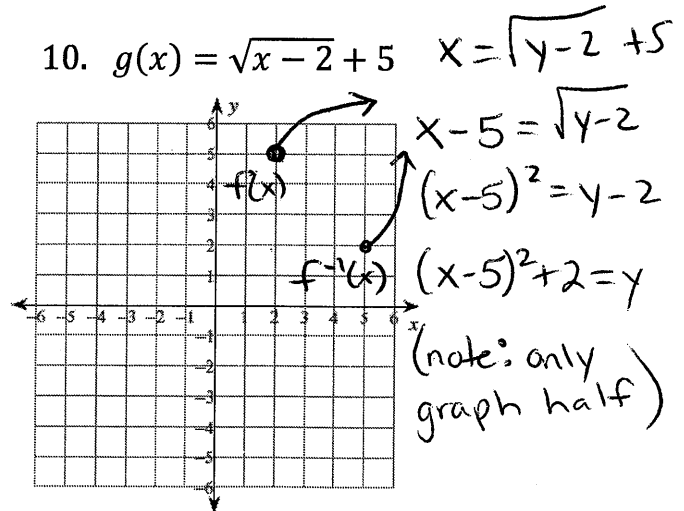
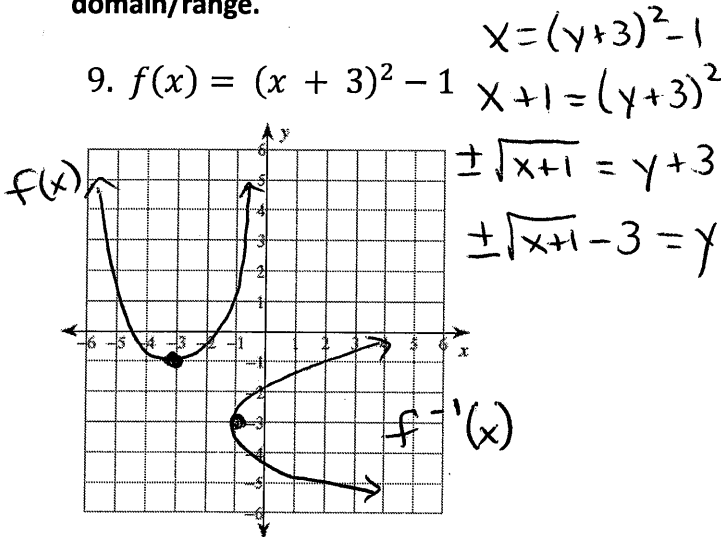
5) $h(x) = -5x + 15$ $x = -5y + 15$
 $x - 15 = -5y$
 $y = -\frac{1}{5}x + 3$

6) $h(x) = \frac{3}{x-2} + 1$ $(x-1)(y-2) = 3$
 $x = \frac{3}{y-2} + 1$ $xy - 2x - y + 2 = 3$
 $x - 1 = \frac{3}{y-2}$ $xy - y = 2x + 1$
 $y(x-1) = 2x + 1$
 $y = \frac{2x+1}{x-1}$

7) $y = (x+4)^2 + 1$
 $x = (y+4)^2 + 1$ $\pm\sqrt{x-1} = y+4$
 $x - 1 = (y+4)^2$ $\pm\sqrt{x-1} - 4 = y$

8) $y = \sqrt{x-1} - 5$
 $x = \sqrt{y+5} + 1$ $(x+5)^2 = y-1$
 $x + 5 = \sqrt{y-1}$ $(x+5)^2 + 1 = y$

Find the inverse of the function. Graph both the function and its inverse, then identify domain/range.



Domain (function): $(-\infty, \infty)$ Domain (inverse): $[-1, \infty)$

Range (function): $[-1, \infty)$ Range (inverse): $(-\infty, \infty)$

Domain (function): $[2, \infty)$ Domain (inverse): $[5, \infty)$

Range (function): $[5, \infty)$ Range (inverse): $[2, \infty)$

#6

$$x = \frac{3}{y-2} + 1$$

$$x-1 = \frac{3}{y-2}$$

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

$$y-2 = \frac{3}{x-1}$$

$$y = \frac{3}{x-1} + 2$$