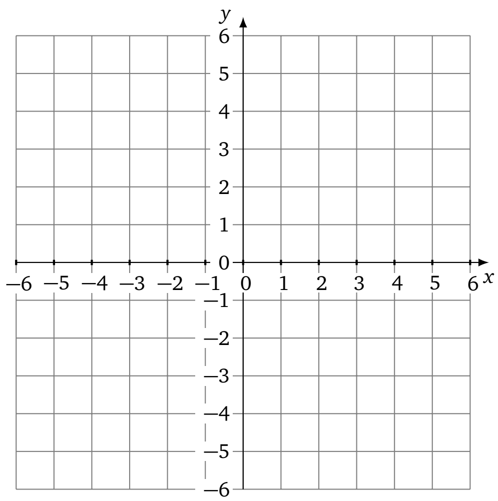
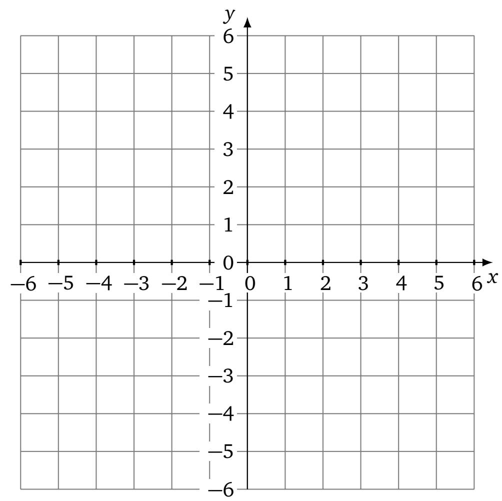
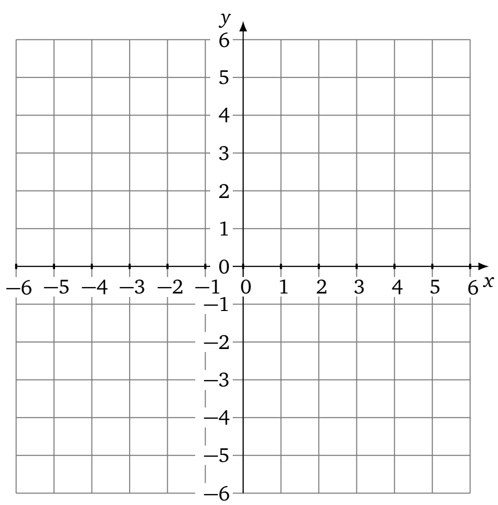
TRANSFORMATIONS MATH 73

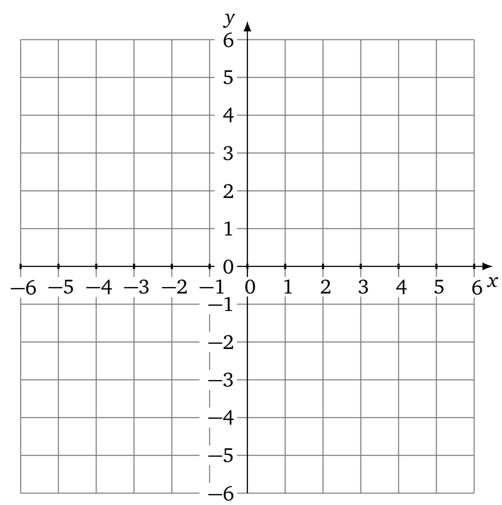
LAST NAME	FIRST NAME	DATE

1 (4 points)**.** Use transformations to plot the function $f(x) = -(x-1)^2 + 3$. Start with a graph of the base function and show one transformation at a time. For each graph, state the plotted function.







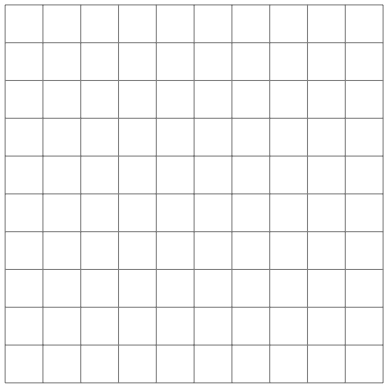


2 (2 points)**.** Find the domain and the range of the function $f(x) = -(x-1)^2 + 3$.

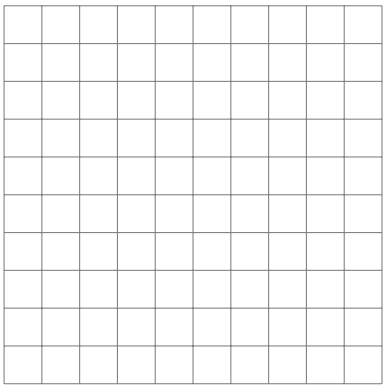
Domain of f: Range of f:

3 (8 points)**.** Sketch the graph for each given function or equation. Use scrath paper to plot appropriate transformations step by step.

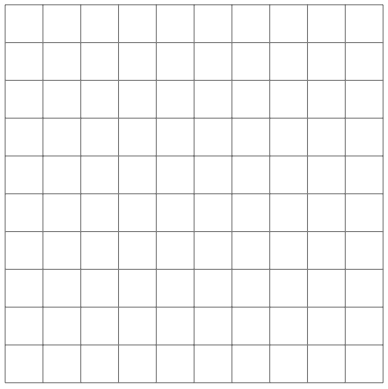
(a) $g(x) = \dfrac{1}{x+1} - 1$



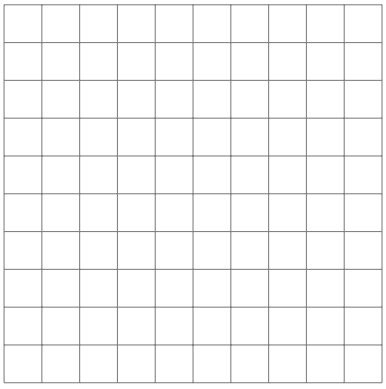
(c) $w(x) = -\left(\left|\dfrac{x}{3}\right| - 2\right)$



(b) $h(x) = 4\sqrt{x+3}$

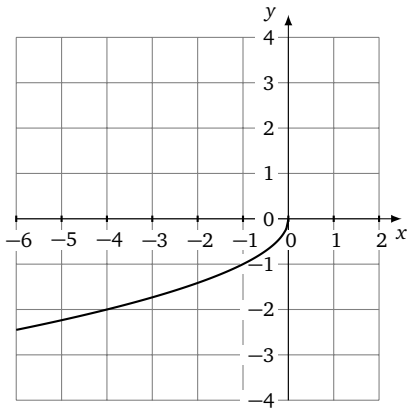


(d) $4x^2 + \dfrac{y^2}{9} = 1$

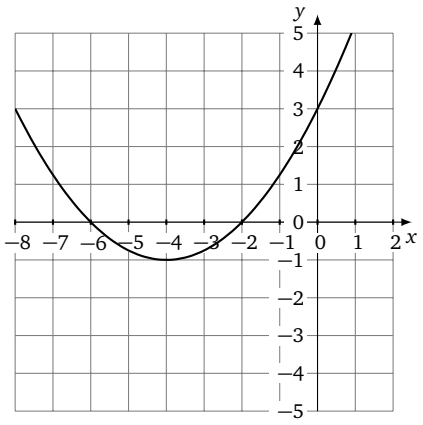


4 (4 points)**.** Find an expression for each of the shown function.

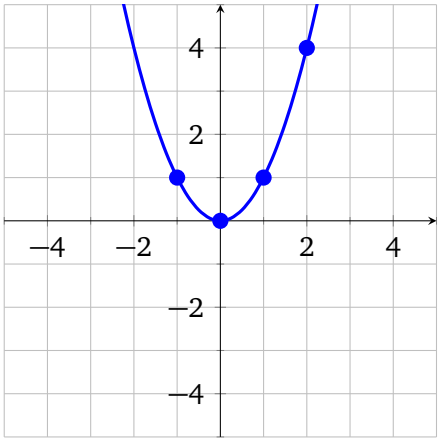
(a) Base function $y = \sqrt{x}$



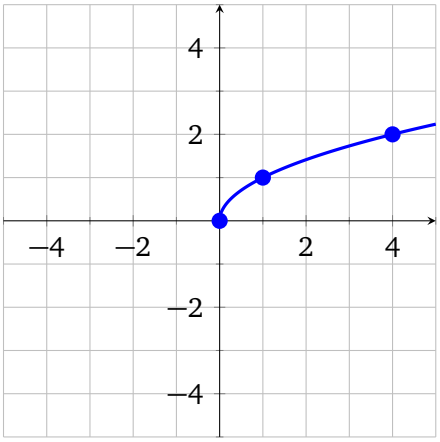
(b) Base function $y = x^2$



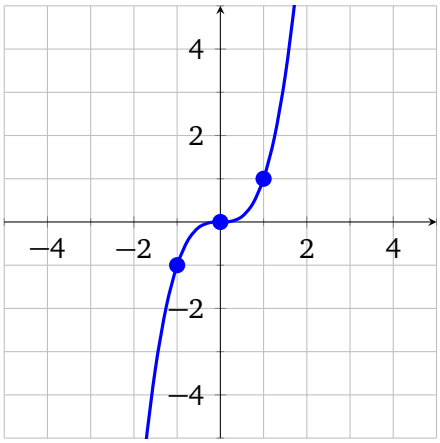
Base Graphs



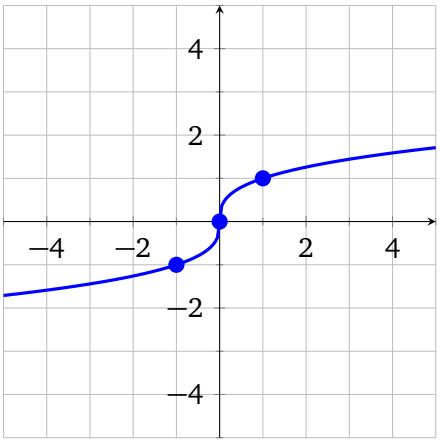
$y = x^2$



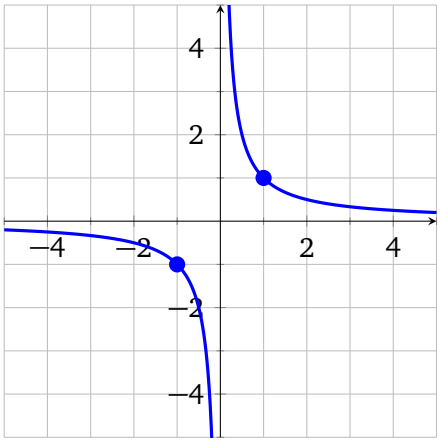
$y = \sqrt{x}$



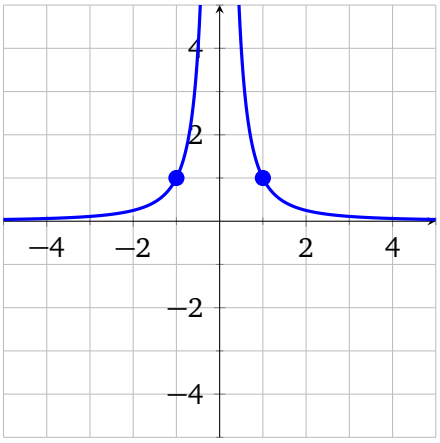
$y = x^3$



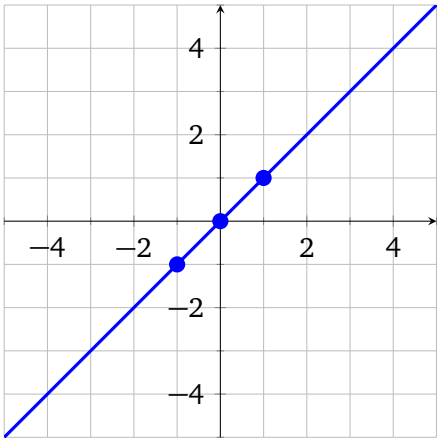
$y = \sqrt[3]{x}$



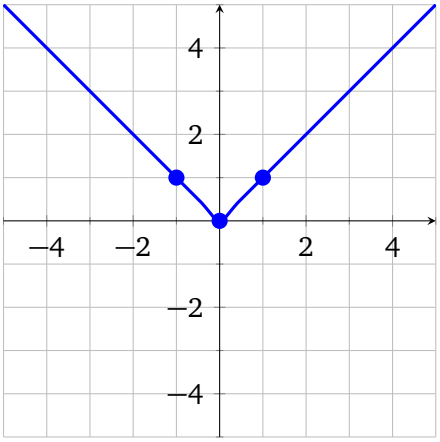
$y = 1/x$



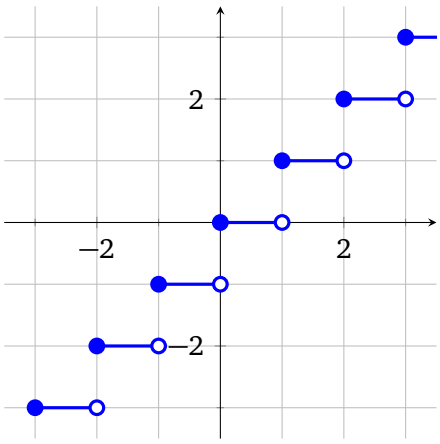
$y = 1/x^2$



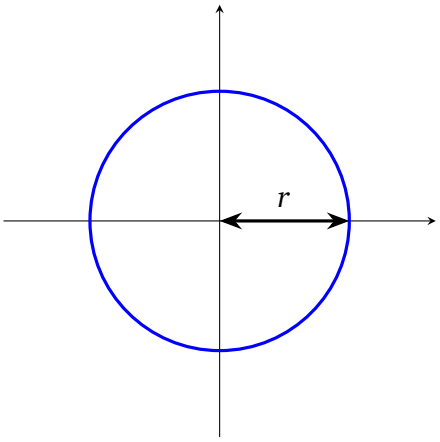
$y = x$



$y = |x|$



$y = [\![x]\!]$



$x^2 + y^2 = r^2$

TRANSFORMATIONS EXERCISES.

Graph each of the following functions by recognizing the base graph and transformations. Clearly indicate the key points and label your axes. Use graph paper, and do not use any graphing software (though it might be useful for checking your answers).

1. $y = x^2 + 3$

2. $y = -3|x|$

3. $f(x) = \sqrt[3]{x+2} + 1$

4. $g(x) = \sqrt{x-4}$

5. $y = \frac{1}{2}(x+3)^3$

6. $y = \frac{3}{x}$

7. $y = \frac{1}{(x-2)^2}$

8. $y = 2\sqrt{x} - 4$

9. $f(x) = -(x-6)^2$

10. $y = \sqrt[3]{x} - 2$

11. $y = 3 - |x|$

12. $(x-1)^2 + y^2 = 4$

13. $y = -\frac{4}{x^2}$

14. $y = -x^3 + 2$

15. $f(x) = \frac{1}{x+3} - 4$

16. $(x+1)^2 + (y-2)^2 = 1$

17. $y = \frac{1}{3}x - 5$

18. $g(x) = 2|x-1| - 3$

19. $y = 4 - x$

20. $y = \frac{3}{x-2}$