Transformations of Parent Functions Homework

Directions: Be sure to show all work, communicate your thought process, and justify your reasoning. Remember to check that your answers are complete, correct, and reasonable.

For each function, state the name of the parent function. Describe the transformation. Then graph each function on graph paper, and state the domain and range.

1. $f(x) = (x - 3)^2 + 4$

2. $y = -\frac{1}{4}|-x + 5|$

3. $y = 3x^3 - 9$

4. $f(x) = \sqrt{(-x + 4)} - 5$

5. $f(x) = \frac{1}{2}x^2 - 3$

6. $y = 2|x + 8|$

7. $y = -(x - 1)^2 + 3$

8. $f(x) = \frac{1}{2}(x + 3)^2 - 7$

Write a function for each:

9. Absolute value function stretched by a factor of 7, reflected over the x-axis, and shifted 5 units up and 2 units left

10. Radical function reflected across the y-axis, shrunk by a factor of ½, and shifted 4 units up and 3 to the right

11. Quadratic function reflected across the x-axis, shifted horizontally 7 units and vertically down 3 units, and shrunk by a factor of 2/5

12. Cubic function reflected over the y-axis, shifted vertically 8 units and horizontally 3 units to the left, and dilated by a factor of 9

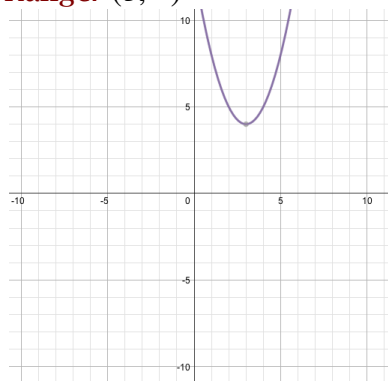13. Linear function shifted 4 units down

1. Quadratic function shifted to the left 3 and up 4 units
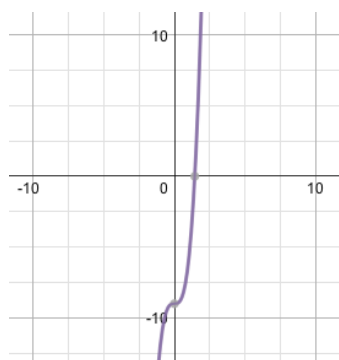Domain: $(-\infty,\infty)$
Range: $(3,\infty)$

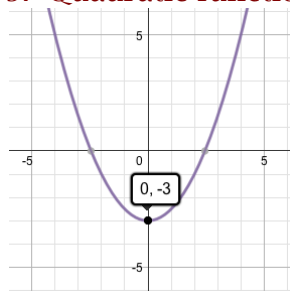3. Cubic function shrunk by a factor of 3 and shifted 9 units down
Domain: $(-\infty,\infty)$
Range: $(-\infty,\infty)$
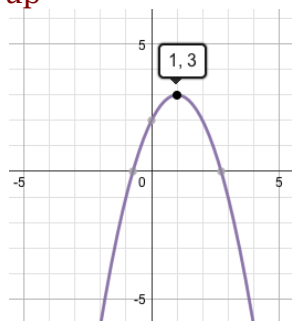

5. Quadratic function stretched by a factor of 2 and shifted 3 units down

Domain: $(-\infty,\infty)$
Range: $(-3,\infty)$

7. Quadratic function reflected across the x-axis, and shifted 1 unit to the right and 3 units up

Domain: $(-\infty,\infty)$
Range: $(-\infty,3)$

9. $y = -1/7|x + 2| + 5$
11. $y = -5/2(x - 7)^2 - 3$
13. $y = x - 4$