Write out the following equations given the scenarios.

1) A quadratic that has been shifted right 4 units and down 8 units.

2) A line that has been vertically stretched by a factor of 9 and moved up 3 units.

3) A quadratic that has been reflected, moved left 3 units and up 9 units.

4) A line that has been reflected and moved down 4 units.

5) A quadratic that has been vertically stretched by a factor of 5 and moved up 9 units.

Graph the linear functions given and be sure to tell what has happened from the parent function $y = x$.

6) $y = 3x - 3$

7) $y = -\frac{1}{4}(x + 2)$

8) $y = (x - 3) + 2$

State whether they are maximums or minimums based off the equation.

9) $y = 2(x - 1)^2 + 2$

10) $y = -4x^2 + 1$

11) $y = x^2 - 6x + 1$

Find the vertex of the following. Then list out the axis of symmetry.

12) $y = 6x^2 - 12x + 1$

13) $y = -\frac{1}{4}x^2 + 4x - 3$

14) $y = x^2 - 5x$

15) Which graph is wider? How do you know?
   a. $y = \frac{1}{3}(x - 1)^2 + 1$
   b. $y = \frac{1}{10}x^2 - 9$

List out all the transformations that have happened from the parent function.

16) $y = 4(x - 1)^2 + 3$

17) $y = -(x + 4)^2 - 4$

18) $y = \frac{1}{5}x^2 + 10$