

Practice B - Transformations

Describe the following transformations on the function  $y = x^2$ .

1. $y = -(x-2)^2$ • reflect over x-axis • shift right 2	2. $y = (x+3)^2 - 1$ shift left 3 shift down 1
3. $y = 3x^2 + 1$ V. stretch by 3 shift up 1	4. $y = -2x^2$ reflect over x-axis V. stretch by 2
5. $y = -x^2 - 5$ reflect over x-axis shift down 5	6. $y = 3(x+1)^2$ V. stretch by 3 shift left 1
7. $y = \frac{1}{3}(x+2)^2 + 3$ V. Compress by $\frac{1}{3}$ shift left 2 and up 3	8. $y = -\frac{1}{2}(x-1)^2 + 3$ reflect over x-axis V. Compress by $\frac{1}{2}$ shift right 1 and up 3
9. $y = (x+3)^2$ shift left 3	10. $y = -(x-1)^2 + 4$ reflect over x-axis shift right 1 and up 4

Write the equation for the function  $y = x^2$  with the following transformations.

11. reflect across the x-axis, shift down 1 $y = -x^2 - 1$	12. vertically stretch by a factor of 3, shift right 5 and up 1 $y = 3(x-5)^2 + 1$
13. shift up 5 $y = x^2 + 5$	14. reflect across the x-axis, shift down 8 $y = -x^2 - 8$
14. reflect across the x-axis and vertically compress by a factor of $\frac{1}{2}$ $y = -\frac{1}{2}x^2$	16. vertically stretch by a factor of 4, shift left 3 and down 2 $y = 4(x+3)^2 - 2$