

- Discuss the features of the function $g(x) = -2(x + 3)^2 - 5$. Domain? Range? Vertex?

THE GRAPH OF g IS THE GRAPH OF $y = x^2$

AFTER THE FOLLOWING TRANSFORMATIONS:

① SHIFT LEFT 3 UNITS : $y = (x+3)^2$

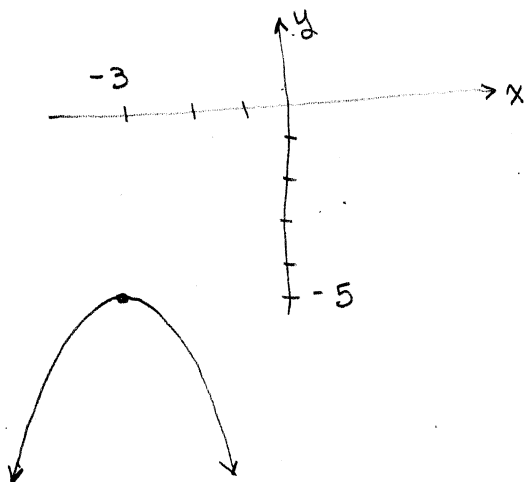
② VERTICALLY STRETCH BY FACTOR OF 2 :

$$y = 2(x+3)^2$$

③ REFLECT ABOUT THE X-AXIS : $y = -2(x+3)^2$

④ SHIFT DOWN 5 UNITS : $y = -2(x+3)^2 - 5$

THE GRAPH LOOKS ROUGHLY LIKE



$$\text{DOMAIN} = (-\infty, \infty)$$

$$\text{RANGE} = (-\infty, -5]$$

$$\text{VERTEX AT } (-3, -5)$$