Example: Given $f(x) = x + 3$ and $g(x) = x^2 - 3$

Determine:

a. $f(g(x)) = (x^2 - 3) + 3$

$= x^2$

b. The domain and range of f(g(x)).

Domain & Range of inside function:

$g(x) = x^2 - 3$

D: $\{x \mid x \in R\}$

R: $\{y \mid y \geq -3, y \in R\}$

Domain & Range of composite.

$f(x) = x + 3$

Domain is restricted by range of inside function.

D: $\{x \mid x \geq -3, x \in R\}$

Range is restricted by domain.

Since $x \geq -3$, the lowest y-value is:

$f(x) = x + 3$

$= -3 + 3$

$= 0$

R: $\{y \mid y \geq 0, y \in R\}$