Piecewise Composite Functions

$$\lfloor p^2+3 \rfloor, \quad 0 \le p \le 3$$
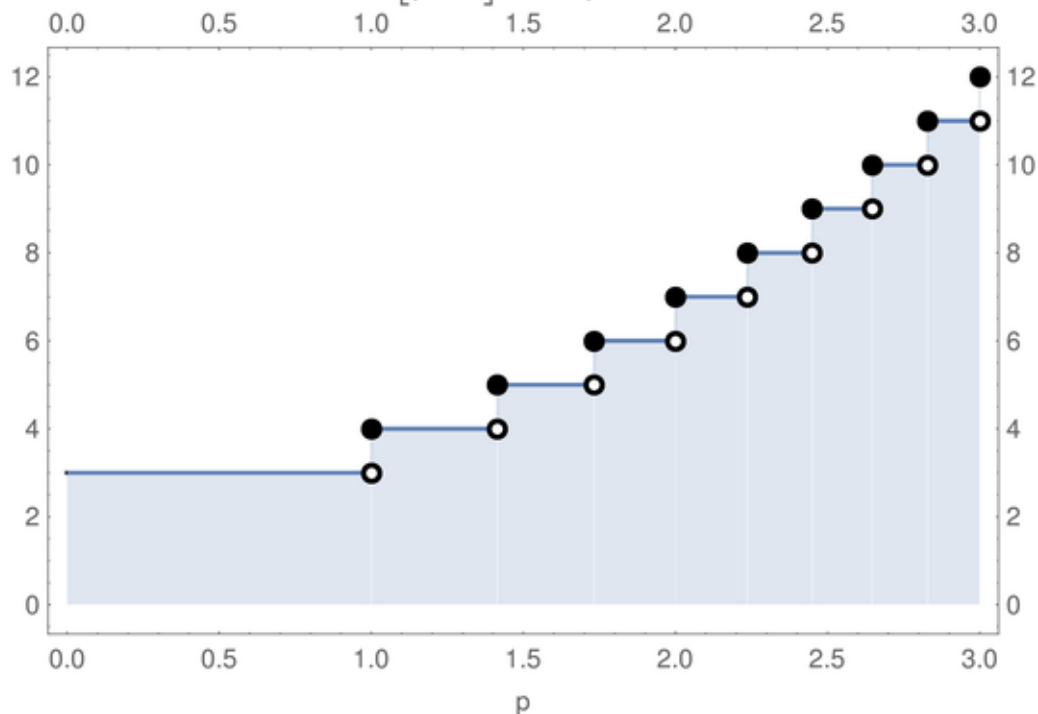
$$
\begin{cases}
3 & p < 1 \\
4 & 1 \le p < \sqrt{2} \\
5 & \sqrt{2} \le p < \sqrt{3} \\
6 & \sqrt{3} \le p < 2 \\
7 & 2 \le p < \sqrt{5} \\
8 & \sqrt{5} \le p < \sqrt{6} \\
9 & \sqrt{6} \le p < \sqrt{7} \\
10 & \sqrt{7} \le p < 2\sqrt{2} \\
11 & \text{True}
\end{cases}
$$