

$$\begin{aligned}
 14 \text{ c) } (f \circ g)(x) &= f(g(x)) \\
 &= f(x^2 - 6x) \\
 &= 3(x^2 - 6x) - 2 \\
 &= 3x^2 - 18x - 2
 \end{aligned}$$

Domain is NOT intersection

Consider what goes on from input to output

input domain of  $g$

$$[-1, 4] \xrightarrow{g} [-9, 7]$$

can't use this whole interval in  $f(x)$  only  $[0, 6]$  is allowed.

$$\xrightarrow{f} [-2, 16]$$

try subbing in -1 and 4 into  $g$

and turning point of  $g$   $x=3$  to see ABSOLUTE MIN

$\therefore$  Domain of  $f \circ g$  is  $[-1, 4]$

Range of  $f \circ g$  is  $[-2, 16]$

d)  $(h \circ i)(x)$  can only add points with same  $x$ 's

$$= \{(3, 9), (5, 12)\}$$

e)  $(h \circ i)(x) = h(i(x))$

(take all inputs of  $i$ , find outputs then put them into  $h$  to find new outputs)

$$= \{(1, 2), (2, 1), (3, 4), (4, 3), (5, 5)\}$$