Samples **Range and domain SOLUTIONS**

1. $f(w) = \dfrac{5}{-8+12w}$

When evaluating the range, we need to keep in mind the following (starting with variable w):

- there are no squares, square roots or absolute value signs ;
- fraction can be 0 only if its numerator is 0 (which is not the case), denominator cannot be 0 .

Hence, the range of this function is $(-\infty, 0) \cup (0, \infty)$.

2. $f(w) = \dfrac{-11}{\sqrt{w}-9}$

When evaluating the range, we need to keep in mind the following (starting with variable w):

- square root is always positive or 0, so $0 \leq \sqrt{w}$;
- fraction can be 0 only if its numerator is 0 (which is not the case), denominator cannot be 0 ;
- so $-9 \leq \sqrt{w} - 9$ and $\sqrt{w} - 9 \neq 0$.

Hence, the range of this function is $(-\infty, 0) \cup [\dfrac{11}{9}, \infty]$.

3. $f(x) = \dfrac{5}{11+|x|}$

When evaluating the range, we need to keep in mind the following (starting with variable x):

- absolute value is always positive or 0, so $0 \leq |x|$;
- fraction can be 0 only if its numerator is 0 (which is not the case), denominator cannot be 0 ;
- so $11 \leq 11 + |x|$.

Hence, the range of this function is $(0, \dfrac{5}{11}]$.