Samples **Range and domain SOLUTIONS**

1. $f(w) = \left(\dfrac{-6}{-9w}\right)^2$

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

- there are no square roots or absolute value signs;
- negative numerator usually reverse the inequality, and also this fraction can't be 0, so $\dfrac{-6}{-9w} \neq 0$;
- squaring always gives a positive or 0, so $\left(\dfrac{-6}{-9w}\right)^2 > 0$.

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

2. $f(z) = \dfrac{7}{(\sqrt{z})^2}$

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

- square root is always positive or 0, so $\sqrt{z} \geq 0$;
- squaring always gives a positive or 0, so $(\sqrt{z})^2 \geq 0$;
- fraction can be 0 only if numerator is 0, so $\dfrac{7}{(\sqrt{z})^2} > 0$.

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

3. $f(w) = -3 + \left|\dfrac{-10}{w}\right|$

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

- numerator is not 0, fraction can't be 0, so $\dfrac{-10}{w} \neq 0$;
- absolute value is always positive or 0, so $\left|\dfrac{-10}{w}\right| > 0$;
- so $-3 + \left|\dfrac{-10}{w}\right| > -3$.

Hence, the range of this function is $(-3, \infty)$.