

## Gr 12

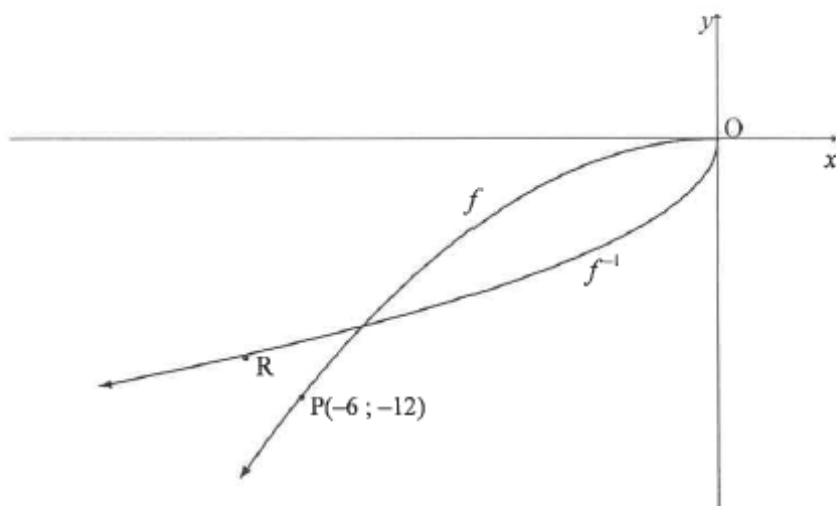
### Informal Test

#### Function and Inverses

##### QUESTION 4

In the diagram below, the graph of  $f(x) = ax^2$  is drawn in the interval  $x \leq 0$ .

The graph of  $f^{-1}$  is also drawn.  $P(-6; -12)$  is a point on  $f$  and  $R$  is a point on  $f^{-1}$ .



- 4.1 Is  $f^{-1}$  a function? Motivate your answer. (2)
- 4.2 If  $R$  is the reflection of  $P$  in the line  $y = x$ , write down the coordinates of  $R$ . (1)
- 4.3 Calculate the value of  $a$ . (2)
- 4.4 Write down the equation of  $f^{-1}$  in the form  $y = \dots$  (3)
- [8]

## MEMO

## QUESTION/VRAAG 4

4.1	Yes For every $x$ -value there is only one corresponding $y$ value <b>OR/OF</b> One to one mapping (vertical line test)	✓ answer ✓ reason  (2)
4.2	$R(-12; -6)$	✓ answer (1)
4.3	$f(x) = ax^2$ substitute $(-6; -12)$ $-12 = a(-6)^2$ $a = \frac{-1}{3}$	✓ substitution ✓ answer (2)
4.4	$f: y = -\left(\frac{1}{3}\right)x^2$ $f^{-1}: x = -\left(\frac{1}{3}\right)y^2$ $y^2 = -3x$ $y = \pm\sqrt{-3x}$ Only $y = -\sqrt{-3x}$ and $x \leq 0$	✓ swapping $x$ and $y$ ✓ $y^2 = -3x$ ✓ $y = -\sqrt{-3x}$ (3)
		[8]