



## National 5 Mathematics

### Functions - Solutions

Marks are indicated in brackets after each question number

#### **2015 Paper 2 Question 2, (2)**

$$f(x) = 3x + 2$$

$$f(a) = 3a + 2$$

Since  $f(a) = 23$  we have

$$3a + 2 = 23$$

$$3a = 21$$

$$a = 7$$

#### **2016 Paper 1 Question 9, (2)**

$$f(x) = \frac{2}{\sqrt{x}}$$

$$f(5) = \frac{2}{\sqrt{5}}$$

$$= \frac{2}{\sqrt{5}} \times \frac{\sqrt{5}}{\sqrt{5}}$$

$$= \frac{2\sqrt{5}}{5}$$

#### **2017 Paper 1 Question 1, (2)**

$$f(-5) = (-5)^2 + 3(-5)$$

$$= 25 - 15$$

$$= 10$$

#### **2018 Paper 2 Question 6, (2)**

$$f(x) = 5 + 4x$$

$$f(a) = 5 + 4a = 73$$

Dropping  $f(a)$  gives

$$5 + 4a = 73$$

$$4a = 73 - 5$$



$$4a = 68$$

$$a = \frac{68}{4} = 17$$

**2019 Paper 1 Question 1, (2)**

$$f(x) = 5x^3$$

$$\begin{aligned} f(-2) &= 5 \cdot (-2)^3 \\ &= 5 \cdot -8 \\ &= -40 \end{aligned}$$

**2022 Paper 1 Question 2, (2)**

$$\begin{aligned} f(-3) &= (-3)^3 - 2 \\ &= -27 - 2 \\ &= -29 \end{aligned}$$

**2024 Paper 1 Question 2, (2)**

$$f(x) = (x + 3)^2$$

$$f(7) = (7 + 3)^2 = 10^2 = 100$$

**2025 Paper 1 Question 7, (1) (2)**

**a)**  $f(x) = 3x + 7$

$$\begin{aligned} f(6) &= 3(6) + 7 \\ &= 25 \end{aligned}$$

**b)**  $f(x) = 3x + 7$

$$f(p) = 3p + 7$$

$$3p + 7 = 19$$

$$3p = 12$$

$$p = 4$$