

**BASIC ALGEBRA PAST PAPERS QUESTIONS EDEXCEL A LEVEL**  
**YEAR 1**

1.

Solve the simultaneous equations

$$\begin{aligned}x + y &= 2 \\x^2 + 2y &= 12.\end{aligned}\tag{6}$$

2.

Factorise completely

$$x^3 - 4x^2 + 3x.\tag{3}$$

3.

(a) Write  $\sqrt{45}$  in the form  $a\sqrt{5}$ , where  $a$  is an integer.  
(1)

(b) Express  $\frac{2(3+\sqrt{5})}{(3-\sqrt{5})}$  in the form  $b + c\sqrt{5}$ , where  $b$  and  $c$  are integers.  
(5)

4.

Solve the simultaneous equations

$$\begin{aligned}y &= x - 2, \\y^2 + x^2 &= 10.\end{aligned}\tag{7}$$

5.

Simplify

$$\frac{5-\sqrt{3}}{2+\sqrt{3}},$$

giving your answer in the form  $a + b\sqrt{3}$ , where  $a$  and  $b$  are integers.

(4)

6.

Expand and simplify  $(\sqrt{7} + 2)(\sqrt{7} - 2)$ .

(2)

7.

(a) Expand and simplify  $(7 + \sqrt{5})(3 - \sqrt{5})$ .

(3)

(b) Express  $\frac{7+\sqrt{5}}{3+\sqrt{5}}$  in the form  $a + b\sqrt{5}$ , where  $a$  and  $b$  are integers.

(3)

8.

Simplify

$$\frac{5-2\sqrt{3}}{\sqrt{3}-1}$$

giving your answer in the form  $p + q\sqrt{3}$ , where  $p$  and  $q$  are rational numbers.

(4)

**9.**

(a) Simplify

$$\sqrt{32} + \sqrt{18}$$

giving your answer in the form  $a\sqrt{2}$ , where  $a$  is an integer.

**(2)**

(b) Simplify

$$\frac{\sqrt{32} + \sqrt{18}}{3 + \sqrt{2}}$$

giving your answer in the form  $b\sqrt{2} + c$ , where  $b$  and  $c$  are integers.

**(4)**

**10.**

Express  $8^{2x+3}$  in the form  $2^y$ , stating  $y$  in terms of  $x$ .

**(2)**