Surds

(*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)

(*a*) Expand and simplify $(4 + \sqrt{3})(4 - \sqrt{3})$.

(2)

(*b*) Express $\frac{26}{4+\sqrt{3}}$ in the form $a + b\sqrt{3}$, where a and b are integers.

(2)

(*a*) Express $\sqrt{108}$ in the form $a\sqrt{3}$, where a is an integer.

(1)

(*b*) Express $(2 - \sqrt{3})^2$ in the form $b + c\sqrt{3}$, where b and c are integers to be found.

(3)

Simplify $(3 + \sqrt{5})(3 - \sqrt{5})$.

(2)

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)

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

(2)

Simplify

(*a*) $(3\sqrt{7})^2$

(1)

(*b*) $(8 + \sqrt{5})(2 - \sqrt{5})$

(3)

(*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)**

Write

$$\sqrt{(75)} - \sqrt{(27)}$$

in the form $k\sqrt{x}$, where k and x are integers.

(2)

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)