# Edexcel (U.K.) Pre 2017

# Questions By Topic

# C1 Chap01 Algebra and Functions

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Leave blank

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

**(2)**

**Q3**

**(Total 2 marks)**

Leave blank

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

**(2)**

**Q2**

**(Total 2 marks)**

Leave blank

**1.** Write

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

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

**(2)**

**Q1**

**(Total 2 marks)**

Leave blank

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

**(2)**

**Q1**

**(Total 2 marks)**

Leave blank

**1.** (a) Write down the value of $8^{\frac{1}{3}}$.

**(1)**

(b) Find the value of $8^{-\frac{2}{3}}$.

**(2)**

**Q1**

**(Total 3 marks)**

Leave blank

**2.** Given that $32\sqrt{2} = 2^a$, find the value of $a$.

**(3)**

**Q2**

**(Total 3 marks)**

Leave blank

**1.** (a) Write down the value of $125^{\frac{1}{3}}$.

**(1)**

(b) Find the value of $125^{-\frac{2}{3}}$.

**(2)**

**Q1**

**(Total 3 marks)**

Leave blank

**2.** (a) Write down the value of $16^{\frac{1}{4}}$.

**(1)**

(b) Simplify $(16x^{12})^{\frac{3}{4}}$ .

**(2)**

**Q2**

**(Total 3 marks)**

Leave blank

**1.** Find the value of

(a) $25^{\frac{1}{2}}$

**(1)**

(b) $25^{-\frac{3}{2}}$

**(2)**

**Q1**

**(Total 3 marks)**

Leave blank

**2.** Factorise completely

$$x^3 - 9x.$$

**(3)**

Q2

**(Total 3 marks)**

Leave blank

**1.** Factorise completely $x - 4x^3$

**(3)**

Q1

**(Total 3 marks)**

Leave blank

**1.** Simplify

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

**(1)**

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

**(3)**

**Q1**

**(Total 4 marks)**

Leave blank

**1.** (a) Find the value of $16^{-\frac{1}{4}}$

**(2)**

(b) Simplify $x\left(2x^{-\frac{1}{4}}\right)^4$

**(2)**

**(Total 4 marks)**

**Q1**

Leave blank

**6.**

**Figure 1**

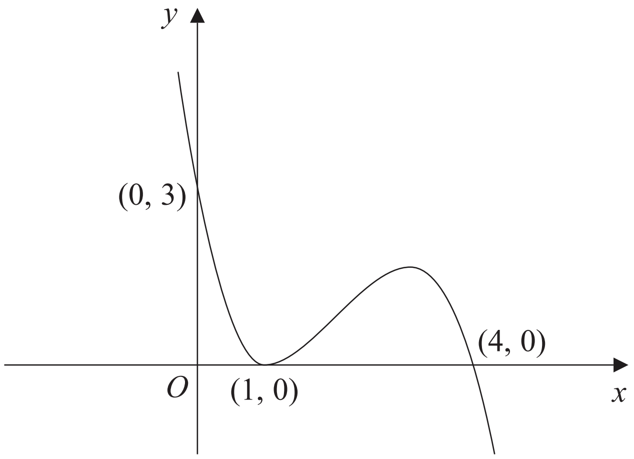

Figure 1 shows a sketch of the curve with equation $y = \mathrm{f}(x)$. The curve passes through the points (0, 3) and (4, 0) and touches the $x$-axis at the point (1, 0).

On separate diagrams sketch the curve with equation

(a) $y = \mathrm{f}(x + 1)$,

**(3)**

(b) $y = 2\,\mathrm{f}(x)$,

**(3)**

(c) $y = \mathrm{f}\left(\frac{1}{2}x\right)$.

**(3)**

On each diagram show clearly the coordinates of all the points where the curve meets the axes.

Leave blank

**3.** 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)**

Leave blank

**3.** 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)**

**Q3**

**(Total 4 marks)**

Leave blank

**2.** (a) Find the value of $8^{\frac{4}{3}}$.

**(2)**

(b) Simplify $\dfrac{15x^{\frac{4}{3}}}{3x}$.

**(2)**

Q2

**(Total 4 marks)**

Leave blank

**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)**

**Q2**

**(Total 4 marks)**

Leave blank

**2.** (a) Evaluate $(32)^{\frac{3}{5}}$, giving your answer as an integer.

**(2)**

(b) Simplify fully $\left(\frac{25x^4}{4}\right)^{-\frac{1}{2}}$

**(2)**

**Q2**

**(Total 4 marks)**

Leave blank

**6.** (a) Show that $(4 + 3\sqrt{x})^2$ can be written as $16 + k\sqrt{x} + 9x$, where $k$ is a constant to be found.

**(2)**

(b) Find $\int (4 + 3\sqrt{x})^2 \,\mathrm{d}x$.

**(3)**

**Q6**

**(Total 5 marks)**

Leave blank

**3.** Show that $\dfrac{2}{\sqrt{(12)}-\sqrt{(8)}}$ can be written in the form $\sqrt{a}+\sqrt{b}$, where $a$ and $b$ are integers.
**(5)**

**5.** Find the set of values of $x$ for which

(a) $2(3x + 4) > 1 - x$

**(2)**

(b) $3x^2 + 8x - 3 < 0$

**(4)**

Leave blank

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

**(3)**

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

**(3)**

**Q2**

**(Total 6 marks)**

Leave blank

**2.** (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)**

**8.** $$4x - 5 - x^2 = q - (x + p)^2$$

where $p$ and $q$ are integers.

(a) Find the value of $p$ and the value of $q$.

**(3)**

(b) Calculate the discriminant of $4x - 5 - x^2$

**(2)**

(c) On the axes on page 17, sketch the curve with equation $y = 4x - 5 - x^2$ showing clearly the coordinates of any points where the curve crosses the coordinate axes.

**(3)**

**10.** (a) On the same axes sketch the graphs of the curves with equations

(i) $y = x^2(x - 2)$,

**(3)**

(ii) $y = x(6 - x)$,

**(3)**

and indicate on your sketches the coordinates of all the points where the curves cross the $x$-axis.

(b) Use algebra to find the coordinates of the points where the graphs intersect.

**(7)**