A70 (H) Expanding Cubic (Triple) Brackets

OCR

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(b) $(x+3)(x-4)(x+5)$ is identical to $x^3 + ax^2 - 17x + b$.

A70 Find the value of a and the value of b.

(b) $a =$ .....

$b =$ ..... **[2]**

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(b) $(x+3)(x-4)(x+5)$ is identical to $x^3 + ax^2 - 17x + b$.

A70 Find the value of a and the value of b.

$x^3 + 4x^2 - 17x - 60$

$(x+3)(x-4)$

x	x	-4
x	x^2	$-4x$
$+3$	$+3x$	-12

$x^2 - 1x - 12$

$(x^2 - 1x - 12)(x+5)$

	x^2	$-1x$	-12
x	x^3	$-1x^2$	$-12x$
$+5$	$+5x^2$	$-5x$	-60

(b) $a =$ 4

$b =$ -60 **[2]**

(b) Expand and simplify.

A70

$$(2x - 1)(x + 5)(3x - 2)$$

(b) ..... **[4]**

(b) Expand and simplify.

A70

$(2x - 1)(x + 5)(3x - 2)$

$(2x-1)(x+5)$

$2x^2 + 10x - 1x - 5$

$2x^2 + 9x - 5$

$\times$	$2x^2$	$+9x$	-5
$3x$	$6x^3$	$+27x^2$	$-15x$
-2	$-4x^2$	$-18x$	$+10$

(b) $6x^3 + 23x^2 - 33x + 10$ **[4]**

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17 $(x+a)(x+3)(2x+1) = bx^3 + cx^2 + dx - 12$

A7OH

Find the value of a, b, c and d.

$a =$ .....

$b =$ .....

$c =$ .....

$d =$ ..... **[4]**

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17 $(x+a)(x+3)(2x+1) = bx^3 + cx^2 + dx - 12$

A7OH

Find the value of a, b, c and d.

$a \times 3 \times 1 = -12$

-4

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

$(x-4)(x+3)$

$x^2 + 3x - 4x - 12$

$= x^2 - 1x - 12$

$(x^2 - 1x - 12)(2x+1)$

$2x^3 + 1x^2 - 2x^2 - 1x - 24x - 12$

$2x^3 - 1x^2 - 25x - 12$

$a =$ ....-4....

$b =$ ....2....

$c =$ ....-1....

$d =$ ....-25.... **[4]**

EDEXCEL

13 Show that

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$$(3x - 1)(x + 5)(4x - 3) = 12x^3 + 47x^2 - 62x + 15$$

for all values of x.

(Total of Question 13 is 3 marks)

13 Show that

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$$(3x - 1)(x + 5)(4x - 3) = 12x^3 + 47x^2 - 62x + 15$$

for all values of x.

$(3x-1)(x+5)$

$3x^2 + 15x - 1x - 5$

$3x^2 + 14x - 5$

$(3x^2 + 14x - 5)(4x - 3)$

$12x^3 - 9x^2 + 56x^2 - 42x - 70x + 15$

$12x^3 + 47x^2 - 62x + 15$

(Total of Question 13 is 3 marks)

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Martin expands $(2x + 1)(2x - 3)(3x + 2)$

He gets $12x^3 - 4x^2 - 17x + 6$

(b) Explain why Martin's solution cannot be correct.

.....

.....

(1)

(Total for Question 16 is 2 marks)

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Martin expands $(2x + 1)(2x - 3)(3x + 2)$

He gets $12x^3 - 4x^2 - 17x + 6$

$1 \times -3 \times 2 = -6$

(b) Explain why Martin's solution cannot be correct.

$(2x+1)(2x-3)(3x+2)$

Expansion should end in -6

$4x^2 - 6x + 2x - 3$

$(4x^2 - 4x - 3)(3x+2)$

(1)

(Total for Question 16 is 2 marks)

$-3 \times +2 = -6$

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13 (a) Expand and simplify $(x + 2)(2x - 3)(3x + 1)$

.....

(3)

Video created by W Neill

13 (a) Expand and simplify $(x + 2)(2x - 3)(3x + 1)$

$(x+2)(2x-3)$

$2x^2 - 3x + 4x - 6$

$2x^2 + 1x - 6$

$(2x^2 + 1x - 6)(3x + 1)$

$6x^3 + 2x^2 + 3x^2 + 1x - 18x - 6$

$6x^3 + 5x^2 - 17x - 6$

(3)

Created by W Neill

11 Expand and simplify $(x + 2)(x + 8)(x - 4)$

.....

(Total for Question 11 is 3 marks)

Created by W Neill

11 Expand and simplify $(x + 2)(x + 8)(x - 4)$

$(x+2)(x+8)$

$x^2 + 8x + 2x + 16$

$x^2 + 10x + 16(x-4)$

	x^2	$+10x$	$+16$
x	x^3	$10x^2$	$16x$
-4	$-4x^2$	$-40x$	-64

$x^3 + 6x^2 - 24x - 64$

(Total for Question 11 is 3 marks)

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10 Show that $(x + 1)(x + 2)(x + 3)$ can be written in the form $ax^3 + bx^2 + cx + d$ where a, b, c and d are positive integers.

(Total for Question 10 is 3 marks)

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10 Show that $(x + 1)(x + 2)(x + 3)$ can be written in the form $ax^3 + bx^2 + cx + d$ where a, b, c and d are positive integers.

$(x+1)(x+2)$

$x^2+2x+1x+2$

x^2+3x+2

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

$x^3+3x^2+3x^2+9x+2x+6$

$1x^3+6x^2+11x+6$ ✓

(Total for Question 10 is 3 marks)

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9 (a) Expand and simplify $(x - 2)(2x + 3)(x + 1)$

A70

.....

(3)

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9 (a) Expand and simplify $(x - 2)(2x + 3)(x + 1)$

A70

$(x-2)(2x+3)$

$2x^2+3x-4x-6$

$2x^2-1x-6$ $(x+1)$

	$2x^2$	$-1x$	-6
x	$2x^3$	$-1x^2$	$-6x$
$+1$	$2x^2$	$-1x$	-6

$2x^3+1x^2-7x-6$

(3)

AQA

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26 Expand and simplify $(x - 4)(2x + 3y)^2$

[4 marks]

A70

Answer _____

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26 Expand and simplify $(x - 4)(2x + 3y)^2$

[4 marks]

A70

$(x-4)(2x+3y)(2x+3y)$

$(2x^2+3xy-8x-12y)(2x+3y)$

	$2x^2$	$+3xy$	$-8x$	$-12y$
$2x$	$4x^3$	$+6x^2y$	$-16x^2$	$-24xy$
$3y$	$+6x^2y$	$+9xy^2$	$-24xy$	$-36y^2$

Answer $4x^3+12x^2y+9xy^2-16x^2-48xy-36y^2$