

Partial Fractions Exam Questions MS (From Legacy OCR C4)

Q1 (Jun 2005, Q8) [Modified]

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| <p>(i) $3x+4 \equiv A(2+x)^2+B(2+x)(1+x) + C(1+x)$ $A = 1$ $C = 2$ $A+B=0$ or $4A+3B+C=3$ or $4A+2B+C = 4$ $B = -1$</p> | <p>M1 A/B1 A/B1 A1 A1 5 B1</p> | <p>Accept \equiv or $=$ If identity used, award 'A' mark, if cover-up rule used, award 'B' mark. <u>Any</u> correct eqn for B from identity</p> |
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Q2 (Jan 2006, Q7) [Modified]

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| <p>(i) $A = 3$ $C = 1$ $11 + 8x \equiv A(1+x)^2 + B(2-x)(1+x) + C(2-x)$ M1 e.g. $A - B = 0, 2A + B - C = 8, A + 2B + 2C = 11$ A1 $B = 3$</p> | <p>B1 B1 A1 5</p> | <p>For correct value stated For correct value stated AEF; any suitable identity For any correct (f.t.) equation involving B</p> |
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Q3 (Jun 2007, Q1) [Modified]

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| <p>(i) Correct format $\frac{A}{x+2} + \frac{B}{x-3}$ $A = 1$ and $B = 2$</p> | <table border="1" style="border-collapse: collapse; width: 100%;"> <tr> <td style="padding: 5px;">M1</td> <td rowspan="2" style="padding: 5px; vertical-align: middle;">s.o.i. in answer for both</td> </tr> <tr> <td style="padding: 5px;">A1 2</td> </tr> </table> | M1 | s.o.i. in answer for both | A1 2 |
| M1 | s.o.i. in answer for both | | | |
| A1 2 | | | | |

Q4 (Jan 2008, Q1)

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|---|-----------------------------|------------------------------------|
| <p>(i) Correct format $\frac{A}{x+1} + \frac{B}{x+2}$ $-\frac{1}{x+1}$ or $A = -1$ $+\frac{2}{x+2}$ or $B = 2$</p> | <p>M1 A1 A1 3</p> | <p>stated or implied by answer</p> |
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Q5 (Jun 2010, Q3)

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| <p>$\frac{A}{x-1} + \frac{B}{(x-1)^2} + \frac{C}{x-2}$</p> | <p>M1 For correct format</p> |
| <p>$A(x-1)(x-2) + B(x-2) + C(x-1)^2 \equiv x^2$</p> | <p>M1</p> |
| <p>$A = -3$</p> | <p>A1</p> |
| <p>$B = -1$</p> | <p>A1 (B1 if cover-up rule used)</p> |
| <p>$C = 4$</p> | <p>A1 (B1 if cover-up rule used)</p> |

Q6 (Jun 2013, Q1)

$$\frac{(x-7)(x-2)}{(x+2)(x-1)^2} \equiv \frac{A}{x+2} + \frac{B}{(x-1)} + \frac{C}{(x-1)^2}$$

[If no partial fractions seen anywhere, B0]

$$(x-7)(x-2) \equiv A(x-1)^2 + B(x+2)(x-1) + C(x+2)$$

[Allow careless minor error but not algebraic method error]

or any equiv identity such as

$$\frac{(x-7)(x-2)}{(x-1)^2} \equiv A + \frac{B(x+2)}{(x-1)} + \frac{C(x+2)}{(x-1)^2} \text{ (or even the}$$

identity on the 1st line), in which values of x are substituted (or cfs compared)

$$A = 4, B = -3, C = 2 \text{ or } \frac{4}{x+2} - \frac{3}{x-1} + \frac{2}{(x-1)^2} \text{ ISW}$$

The 3 @ A1 are dep on the used identity being correct.

Cover-up: $A=4, C=2$ score B1,B1; $B = -3$ needs M1, then A1

B1

M1

A1,1,1

[5]

$$\underline{\text{SC}} \quad \frac{(x-7)(x-2)}{(x+2)(x-1)^2} \equiv \frac{A}{x+2} + \frac{Bx+C}{(x-1)^2}$$

[If no partial fractions seen anywhere, B0]

$$(x-7)(x-2) \equiv A(x-1)^2 + (Bx+C)(x+2)$$

[Allow careless minor error but not algebraic method error]

or any equivalent identity (as in previous column) (or even the identity on the 1st line), in which values of x are substituted (or cfs compared)

$$A = 4, B = -3, C = 5 \text{ or } \frac{4}{x+2} + \frac{-3x+5}{(x-1)^2}$$