

17	(i)	$\frac{A}{(x+1)} + \frac{B}{(x-2)} + \frac{C}{(x-2)^2}$ $x^2 - 8x + 9 = A(x-2)^2 + B(x+1)(x-2) + C(x+1)$ $A = 2$ $B = -1$ $C = -1$	<p><b>B1</b></p> <p><b>M1</b></p> <p><b>A1</b></p> <p><b>A1</b></p> <p><b>A1</b></p> <p><b>[5]</b></p>	<p><b>3.1a</b></p> <p><b>2.1</b></p> <p><b>1.1</b></p> <p><b>1.1</b></p> <p><b>1.1</b></p>	<p>may be seen later</p> $\frac{2}{(x+1)} - \frac{1}{(x-2)} - \frac{1}{(x-2)^2}$	
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Question		Answer	Marks	AOs	Guidance	
17	(ii)	$\int \frac{dy}{y} = \int \frac{x^2 - 8x + 9}{(x+1)(x-2)^2} dx$ <p>use of their partial fractions in integration</p> $\ln y  = 2 \ln x+1  - \ln x-2  + \frac{1}{x-2} + c$ <p>substitution of <math>y = 16</math> and <math>x = 3</math></p> <p>correctly exponentiate both sides of their equation</p> $y = \frac{(x+1)^2}{x-2} e^{\frac{3-x}{x-2}}$	<p><b>M1*</b></p> <p><b>M1*</b></p> <p><b>A1</b></p> <p><b>A1</b></p> <p><b>M1dep*</b></p> <p><b>M1</b></p> <p><b>A1</b></p> <p><b>[7]</b></p>	<p><b>3.1a</b></p> <p><b>2.1</b></p> <p><b>1.1</b></p> <p><b>1.1</b></p>	<p>allow omission of integral signs and/or omission of <math>dy</math> and/or <math>dx</math></p> <p>allow one sign error and/or one coefficient error</p> <p><b>A1</b> for any correct natural log integral on RHS FT <i>their</i> <math>\frac{2}{x+1}</math> or <i>their</i> <math>\frac{-1}{x-2}</math></p> <p><b>A1</b> for <math>\frac{1}{x-2}</math> FT <i>their</i> <math>\frac{k}{(x-2)^2}</math></p> <p>expression must include <math>+c</math> and must include at least one natural log term; may be awarded after exponentiating</p> <p>eg <math>\frac{(x+1)^2}{x-2} e^{\frac{1}{x-2}} e^{-1}</math></p>	<p>condone use of brackets instead of modulus signs; these two <b>A</b> marks are only available following the award of <b>both M</b> marks</p> <p>may be awarded following collection of like terms, which may contain errors NB <math>c = -1</math></p>