

Question	Answer	Marks	AOs	Guidance	
8	<p>EITHER</p> <p>Equation of the form <math>y = k(x+1)(x-2)</math>  <math>(0, -4)</math> on curve so <math>k = 2</math></p> <p>OR</p> <p>Equation of the form <math>y = ax^2 + bx + c</math>  <math>(0, -4)</math> on curve <math>c = -4</math>  <math>(-1, 0)</math> on the curve <math>0 = a - b - 4</math>  <math>(2, 0)</math> on the curve <math>0 = 4a - 2b - 4</math></p> <p>Solving simultaneous equations <math>a = 2, b = -2</math></p> <p>BOTH</p> <p>Area = <math>\int_{-1}^2 (2x^2 - 2x - 4) dx</math></p> $\left[ \frac{2x^3}{3} - x^2 - 4x \right]_{-1}^2$ $\left( \frac{2 \times 2^3}{3} - 2^2 - 4 \times 2 \right) - \left( \frac{2 \times (-1)^3}{3} - (-1)^2 - 4 \times (-1) \right)$ $= -\frac{20}{3} - \frac{7}{3} = -9$ <p>Area is 9 below the <math>x</math>-axis.</p>	<p><b>M1</b>  <b>M1</b>  <b>A1</b></p> <p><b>(M1)</b>  <b>(M1)</b></p> <p><b>(A1)</b></p> <p><b>M1</b>  <b>A1</b></p> <p><b>M1</b></p> <p><b>A1</b></p> <p><b>E1</b></p> <p><b>[8]</b></p>	<p><b>1.1a</b>  <b>3.1a</b>  <b>1.1b</b></p> <p><b>1.1a</b>  <b>1.1b</b></p> <p><b>1.1a</b></p> <p><b>1.1a</b></p> <p><b>2.1</b></p> <p><b>2.4</b></p>	<p><b>DR</b></p> <p>Allow with <math>k = 1</math> and without <math>y =</math>  Attempt to find <math>k \neq 1</math>  All correct</p> <p>Uses one point to form an equation  Uses both other points and attempts to solve simultaneous equations</p> <p>All correct</p> <p>Integration – allow without limits – condone one error  FT their quadratic</p> <p>Substitution of limits clearly seen  Complete argument leading to exact answer.</p> <p>Allow for 9 if there is an argument to explain the change of sign even if -9 not seen.</p> <p>Must give modulus and explain the change of sign. FT if their definite integral is negative.</p>	<p>Ignore = 0 if seen</p> <p>Allow for <math>c = -4</math> seen</p> <p>“Area must be positive” is not sufficient explanation.</p>