

Question			Answer	Marks	AO	Guidance	
4	(a)			<p><b>B1</b></p> <p><b>B1</b></p> <p>[2]</p>	<p><b>1.1</b></p> <p><b>1.1</b></p>	<p><math>y =  x-1 </math> drawn correctly – must touch (but not intersect) the positive <math>x</math>-axis</p> <p><math>y = kx^{-1}</math> drawn correctly – must not intersect axes</p>	Intercepts with axes need not be labelled
4	(b)		<p>The graphs in (a) intersect at only point (for any negative values of <math>k</math>) and therefore <math> x-1  = \frac{k}{x} \Rightarrow x x-1  = k</math> has exactly one real root</p>	<p><b>B1</b></p> <p>[1]</p>	<p><b>2.4</b></p>	<p>Dependent on both marks in (a) – must mention that the solution of the equation <math>x x-1  = k</math> corresponds to where the two graphs in (a) intersect (so just stating that the graphs in (a) intersect at only one point is <b>B0</b>)</p>	
4	(c)		<p><math>x x-1  = -6 \Rightarrow x(1-x) = -6</math></p> <p><math>x^2 - x - 6 = 0</math></p> <p><math>x = -2</math></p>	<p><b>M1</b></p> <p><b>A1</b></p> <p>[2]</p>	<p><b>3.1a</b></p> <p><b>2.2a</b></p>	<p>Uses graph and sets up quadratic (oe) – allow if <math>x^2 - x + 6 = 0</math> stated as well (but <b>M0</b> if this is the only quadratic (oe) considered)</p> <p><b>BC</b> <math>x = -2</math> only (www)</p> <p><b>SC</b> If no marks awarded, then <b>B1</b> for <math>x = -2</math> only and then <b>B1</b> for explicitly showing that <math>-2 -2-1  = -2(3) = -6</math></p>	<p>Or setting up a four-term quartic from <math>(x-1)^2 = 36x^{-2}</math></p>