8	**(a)**		$\log_2 x^2 \left(= \log_2 (kx-1) + 3\right)$	**B1**	**1.2**	Using $a\log b = \log\left(b^a\right)$	

Question			Answer	Marks	AO	Guidance	
			$\log_2\left(\frac{x^2}{kx-1}\right)=3$	**M1***	**2.1**	Re-arranging and correctly combining both log terms	Or re-write 3 as $\log_2 8$ and then combining e.g. $2\log_2 x$ $=\log_2\left(8(kx-1)\right)$
			$\frac{x^2}{kx-1}=2^3$ $x^2=8(kx-1)$	**Dep*M1**	**1.1**	Correctly remove logs	$x^2=8(kx-1)$
			$x^2-8kx+8=0$	**A1**	**1.1**	**AG**	Must show sufficient working to justify the given answer (i.e. at least one more line of working from previous M mark)
				[4]			
8	**(b)**		$b^2-4ac=0\Rightarrow(-8k)^2-4(1)(8)=0$	**M1**	**3.1a**	Use of $b^2-4ac=0$	Or state equation must be of the form $(x+p)^2=0$
			$k=(\pm)\frac{1}{\sqrt{2}}$	**A1**	**1.1**	oe exact	with $p^2=8$
			$k=\frac{1}{\sqrt{2}}\Rightarrow x=2\sqrt{2}$	**A1**	**2.2a**	**BC** oe exact	so $x=(\pm)2\sqrt{2}$
			$k=-\frac{1}{\sqrt{2}}\Rightarrow x=-2\sqrt{2}$ and as $\log_2 x$ is only defined for $x>0$ so $x\neq-2\sqrt{2}$	**A1**	**3.2b**	**BC** oe statement for rejection of negative value of x (allow decimal argument)	reject $x=-2\sqrt{2}$ with valid reason
				[4]			