

Question		Answer	Marks	AO	Guidance
3	(a)	$k = 3$	B1 [1]	2.2a	State 3 B0 for $k \geq 3$ Allow B1 for $x \geq 3$, as this implies $k = 3$
	(b)	$f(5) = -13$ -13 is not in domain so $f(-13)$, and hence $ff(5)$, is not defined	M1 A1 [2]	1.2 1.1	Attempt $f(5)$ Correct conclusion Could be implied by -13 Could be part of algebraic attempt at $ff(x)$, with $x = 5$ used, but does not need to be evaluated for M1 Allow equiv, such as 'not possible' SC Allow A1 for $f(-13) = 239$
	(c)	$(x-3)^2 - 17 = x$ $x^2 - 7x - 8 = 0$ $x = 8, x = -1$ Obtain at least $x = 8$ $x = -1$ is not valid as $x \geq 3$, so $x = 8$	M1 A1 A1 [3]	1.1a 1.1 2.3	Equate and attempt to solve If second root is given, it must also be correct Obtain $x = 8$ only, having discarded $x = -1$, with a reason such as 'not in the domain' or 'less than 3' BC Equate and produce at least one root, not necessarily correct for their equation Could be implied by sight of 8, or 8 and -1, even if equation not seen www, eg $x = 8$ given as only root from $(x-8)(x-1)$ is M1A0 Must be using $k = 3$; if referring to 'less than k ' then 3 must have been seen in part (a) Must see some indication that the other root would have been -1, eg a factor of $(x+1)$ or a numerical quadratic formula not fully evaluated
	(d)	$f(x)$ and $f^{-1}(x)$ are reflections in the line $y = x$ so the point of intersection must be on $y = x$	B1 [1]	1.2	Correct description Sufficient to see $f(x)$ and $f^{-1}(x)$ intersect on $y = x$ or reference to reflections in $y = x$