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| **Topic 4: Functions** | **Inverse of a function, Domain & Range of a function** |
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| Given the function $f\left(x\right)= \frac{5}{x - 7}+4$ for $2 \leq x \leq 8, x\ne 7$.(a) Find the range of $f$. (b) Find the value of $f^{-1}\left(-1\right)$.  | [3 marks] |
| Mark scheme:(a) $f\left(2\right)=3 and f\left(8\right)=8$  The range is $f\left(x\right)\leq 3, f\left(x\right)\geq 9$ \*\*Note: Award at most A1 A1 A0 if strict inequalities are used. (b) Either:Sketch of $f$ and $y= -1$ or sketch of $f^{-1} $and $x= -1$ **or**finding the correct expression for $f^{-1}\left(x\right)= \frac{5}{x - 4}+7 = \frac{7x-23}{x-4}$**or** $f^{-1}\left(-1\right)= \frac{7\left(-1\right)-23}{-1-4}$ **Or** $f\left(x\right)= -1$ **Then** $f^{-1}\left(-1\right)=6$  | (A1)A1 A1[3 marks](M1)(M1) (M1)(M1)(A1)[2 marks] |