**Functions**

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| --- | --- | --- |
| $$f\left(x\right)=3x-5$$ | $$f\left(x\right)=\frac{2}{x-1}$$ | $$f\left(x\right)=\frac{2x+1}{x+1}$$ |
| $$x\in R, -6<x<3$$ | $$x\in R, x\ne 1$$ | $$x\in R, x\ne -1$$ |

For each function:

1. Sketch $f\left(x\right)$
2. Find $f^{-1}\left(x\right)$
3. Sketch $f^{-1}\left(x\right)$
4. Solve $f\left(x\right)=f^{-1}\left(x\right)$

**Functions - Answers**

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| --- | --- | --- |
| $$f\left(x\right)=3x-5$$ | $$f\left(x\right)=\frac{2}{x-1}$$ | $$f\left(x\right)=\frac{2x+1}{x+1}$$ |
| $$x\in R, -6<x<3$$ | $$x\in R, x\ne 1$$ | $$x\in R, x\ne -1$$ |

1. Sketch $f\left(x\right)$
2. Find $f^{-1}\left(x\right)$

|  |  |  |
| --- | --- | --- |
| $$f^{-1}\left(x\right)=\frac{x+5}{3}$$ | $$f^{-1}\left(x\right)=\frac{2}{x}+1$$ | $$f^{-1}\left(x\right)=\frac{1-x}{x-2}=\frac{x-1}{2-x}$$ |

1. Sketch $f^{-1}\left(x\right)$
2. Solve $f\left(x\right)=f^{-1}\left(x\right)$

|  |  |  |
| --- | --- | --- |
| $$3x-5=x$$$$2x=5$$$$x=\frac{5}{2}$$ | $$x=\frac{2}{x-1}$$$$x^{2}-x-2=0$$$$\left(x-2\right)\left(x+1\right)=0$$$x=2$, $x=-1$ | $$x=\frac{2x+1}{x+1}$$$$x^{2}+x=2x+1$$$$x^{2}-x-1=0$$$x=1.62$, $x=-0.62$ |