**Summary 1: Functions and Domains**

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| **Function:** a rule that assigns to every number *x* from the domain ***D*** exactly one value *y* or *f(x)* in the range ***R***.**Domain**: all numbers that you can plug in to a function legally. Usually involves solving an equation or an inequality.**Range:** all outcomes $y=f(x)$ from a function. Usually hard to find.Functions are best given in algebraic form or by showing their graph. | **Example**: Domain of $f\left(x\right)=\frac{1}{\sqrt{x^{2}-x-6}}$We need $x^{2}-x-6>0$. To solve an inequality, first solve equality, then use test numbers on the number line:$$x^{2}-x-6=\left(x-3\right)\left(x+2\right)=0$$so that $x=-2, 3$Domain $D=\left(-\infty ,-2\right)∪(3,\infty )$ |