15.3 Algebra of Functions Name_____

- If x is in the domain of two functions f and g then
  - $(f+g)(x)=f(x)+g(x)$
  - $(f-g)(x)=f(x)-g(x)$
  - $(f\cdot g)(x)=f(x)\cdot g(x)$
  - $\left(\frac{f}{g}\right)(x)=\frac{f(x)}{g(x)}$ where $g(x)\neq 0$

Solve functions algebraically given $f(x)=3x-5$ and $g(x)=x^2+7$

1. $(f+g)(4)$ =

2. $(f+g)(x)$ =

Solve functions algebraically given $f(x)=6x+3$ and $g(x)=4x^2-1$

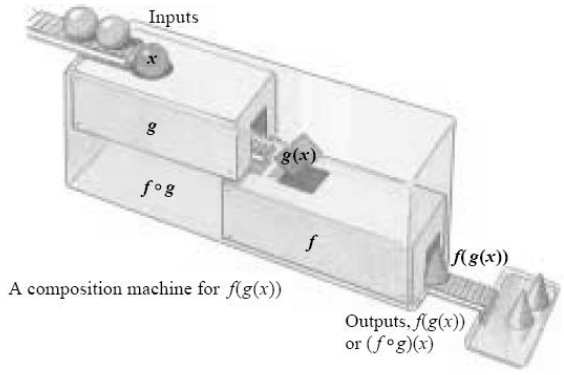
3. $(f\bullet g)(2)$ =

4. $(f\bullet g)(x)$ =

<u>Composite of Function</u>

Let $f$ and $g$ be two functions such that $g(x)$ is in the domain of $f(x)$ for all $x$ in the domain of $g(x)$. The composition of the two functions is denoted by $(f\circ g)(x)$.

We can visualize the composition of functions as follows.




- Find $(f\circ g)(1),(g\circ f)(1),(f\circ g)(x)$, and $(g\circ f)(x)$

5. $f(x)=2x+1;\ \ g(x)=x^2-5$

6. $f(x)=x^2+8;\ \ g(x)=\sqrt{x+17}$

7. $f(x)=x+11;\ \ g(x)=\frac{1}{x^2}$