Practice Exercise For Lecture 7

Q1. Consider functions $f(x)=(x-2)^3$ and $g(x)=\frac{1}{x^2}$. Find the composite function fog(x) and also find the domain of this composite function.

(Ans. $fog(x)=(\frac{1}{x^2}-2)^3$, $Domain\ of\ fog(x)=(-\infty,0)\cup(0,+\infty)$)

Q2. *Let* $f(x)=x+1$ *and* $g(x)=x-2$. *Find* $(f+g)(2)$.

(Ans. $(f+g)(2)=2(2)-1=3$)

Q3. Let $f(x)=x^2+5$ and $g(x)=2\sqrt{x}$. Find $(gof)(x)$. Also find domain of $(gof)(x)$.

(Ans. $gof(x)=2\sqrt{x^2+5}$, $Domain\ of\ gof(x)=(-\infty,+\infty)$)

Q4. Given $f(x)=\frac{3}{x-2}$, and $g(x)=\sqrt{\frac{1}{x}}$, find the domain of these functions. Also find the intersection of their domains.

(Ans. $domain\ of\ f(x)\cap domain\ of\ g(x)=(0,2)\cup(2,+\infty)$)

Q5. Given $f(x)=\frac{1}{x^2}$ and $g(x)=\frac{2}{x-2}$, find $(f-g)(3)$.

(Ans. $(f-g)(3)=\frac{-17}{9}$)