MAT 111 (3. Habersiz Sınav) **Grup ML1 (Perşembe 8:30-10:20)** **21/11/2013**

1- $f(x)=\sqrt{x+1}, \quad g(x)=x^2+2x$ ise $(f\circ g)(x)=?$

2- $\lim\limits_{x\to 1}\dfrac{\sqrt{x}-1}{x-1}=?$

SÜRE: 15 dk. (10+10=20 puan)

Çözüm

1) $(f\circ g)(x)=f(g(x))=f(x^2+2x)=\sqrt{x^2+2x+1}=\sqrt{(x+1)^2}=\boxed{|x+1|}$

2) $\lim\limits_{x\to 1}\dfrac{\sqrt{x}-1}{x-1}=\lim\limits_{x\to 1}\dfrac{(\sqrt{x}-1)(\sqrt{x}+1)}{(x-1)(\sqrt{x}+1)}$

$=\lim\limits_{x\to 1}\dfrac{\cancel{x-1}}{\cancel{(x-1)}(\sqrt{x}+1)}=\lim\limits_{x\to 1}\dfrac{1}{\sqrt{x}+1}=\boxed{\dfrac{1}{2}}$

MAT 111 (3. Habersiz Sınav) **Grup ML2 (Salı 8:30-10:20)** **19/11/2013**

1- $f(x)=x^2+1, \quad g(x)=\sqrt{x^2+2x}$ ise $(f\circ g)(x)=?$

2- $\lim\limits_{x\to 1}\dfrac{x-1}{\sqrt{x}-1}=?$

SÜRE: 15 dk. (10+10=20 puan)

Çözüm!

1) $(f\circ g)(x)=f(g(x))=f(\sqrt{x^2+2x})=\left(\sqrt{x^2+2x}\right)^2+1=x^2+2x+1=\boxed{(x+1)^2}.$

2) $\lim\limits_{x\to 1}\dfrac{x-1}{\sqrt{x}-1}=\lim\limits_{x\to 1}\dfrac{(x-1)(\sqrt{x}+1)}{(\sqrt{x}-1)(\sqrt{x}+1)}=\lim\limits_{x\to 1}\dfrac{\cancel{(x-1)}(\sqrt{x}+1)}{\cancel{x-1}}$

$=\lim\limits_{x\to 1}\sqrt{x}+1=\boxed{2}$

MAT 111 (3. Habersiz Sınav) **Grup ML3 (Perşembe 13:30-15:20)** **21/11/2013**

1- $f(x)=\sqrt{x}-1, \quad g(x)=(x^2+1)^2$ ise $(f\circ g)(x)=?$

2- $\lim_{x\to 1}\frac{2(x-1)}{x^2-x}=?$

SÜRE: 15 dk. (10+10=20 puan)

Çözüm:

$(x^2+1>0 \Rightarrow |x^2+1|=x^2+1)$

1) $(f\circ g)(x)=f(g(x))=f((x^2+1)^2)=\sqrt{(x^2+1)^2}-1 = x^2+1-1=\boxed{x^2}$

2) $\lim_{x\to 1}\frac{2(x-1)}{x^2-x}=\lim_{x\to 1}\frac{2\cancel{(x-1)}}{x\cancel{(x-1)}}=\lim_{x\to 1}\frac{2}{x}=\boxed{2}$

MAT 111 (3. Habersiz Sınav) **Grup ML4 (Çarşamba 15:30-17:20)** **20/11/2013**

1- $f(x) = x^2 - 1, \quad g(x) = \sqrt{x^2+1}$ ise $(f \circ g)(x) = ?$

2- $\lim\limits_{x \to 1} \dfrac{x - x^2}{x-1} = ?$

SÜRE: 15 dk. (10+10=20 puan)

Çözüm:

1- $(f \circ g)(x) = f(g(x)) = f(\sqrt{x^2+1}) = (\sqrt{x^2+1})^2 - 1 = x^2+1-1 = \boxed{x^2}$

2- $\lim\limits_{x \to 1} \dfrac{x-x^2}{x-1} = \lim\limits_{x \to 1} \dfrac{x(1-x)}{x-1} = \lim\limits_{x \to 1} \dfrac{x\,\cancel{(1-x)}}{-\cancel{(1-x)}}$

$= \lim\limits_{x \to 1} (-x) = \boxed{-1}$