MAT 112 - Matematik II **Worksheet V** Ad Soyad:

1. Kismi integrasyon kullanarak asagidaki indirgeme bagintilarini ispatlayiniz.

   (a) $\int \tan^n x dx = \dfrac{\tan^{n-1} x}{n-1} - \int \tan^{n-2} x dx.$

   (b) $\int \dfrac{dx}{(a^2+x^2)^n} = \dfrac{x}{2a^2(n-1)(a^2+x^2)^{n-1}} + \dfrac{2n-3}{2a^2(n-1)} \int \dfrac{dx}{(a^2+x^2)^{n-1}} \quad n \neq 1.$

2. $\int \sqrt{\dfrac{x}{x+1}} dx$

3. $\int \dfrac{x + \sqrt[4]{x-4}}{x - \sqrt{x-4}}\, dx$

4. $\int \dfrac{\sqrt[3]{\frac{x+3}{x-3}} + 1}{(\sqrt[3]{\frac{x+3}{x-3}} - 1)(x-3)}\, dx$

5. $\int \dfrac{8x+5}{\sqrt{10-4x+4x^2}}\, dx$

6. $\int \dfrac{dx}{(x-2)\sqrt{x^2-4x+3}}\, dx$

7. $\int \dfrac{x^2-4x+1}{\sqrt{-x^2+4x-1}}\, dx$

8. $\displaystyle\int \frac{dx}{(x+2)^3\sqrt{x^2+2x-2}}$

9. $\displaystyle\int \frac{\sqrt{x}}{(1+\sqrt[3]{x})^2}\,dx$

10. $\displaystyle\int x^{1/3}(1+x^{-2/3})^{1/4}\,dx$

11. $\displaystyle\int \frac{1}{x^2(2+x^3)^{5/3}}\,dx$