

Unit 5 Transcendentals Review

- Use properties of logarithms to expand the logarithmic function: $f(x) = \ln \sqrt[5]{\frac{4x^2-1}{4x^2+1}}$
- Find the inverse of the function. Be sure to state its domain.
 - $f(x) = \sqrt[3]{x+1}$
 - $f(x) = 3x^2 - 6$
- Find $(f^{-1})'(a)$ for the real number a provided.
 - $f(x) = x^3 - 9, a = -1$
 - $f(x) = x\sqrt{x-3}, a = 4$
- Find the derivative of each function:
 - $f(x) = x\sqrt{\ln x}$
 - $f(x) = \ln \frac{x(x+2)}{x+3}$
 - $f(x) = x^3 e^{2x}$
 - $y = \ln(6 - x^2)^8$
 - $f(x) = \ln \frac{e^x}{3+e^x}$
 - $f(x) = x(4^{-x})$
 - $f(x) = \log_3 \sqrt{1-x}$
 - $y = \arcsin(7x)$
 - $y = x \operatorname{arccsc} x$
 - $y = \frac{1}{2} \arctan e^{2x}$
- Use implicit differentiation to find dy/dx if $y^2 \ln x + 4y = 6$
- Find or evaluate each integral.
 - $\int \frac{1}{7x+2} dx$
 - $\int \frac{\ln \sqrt{x}}{x} dx$
 - $\int \frac{x^2+2x+5}{x^2+5} dx$
 - $\int_1^4 \frac{x+1}{x} dx$
 - $\int x e^{1-x^2} dx$
 - $\int \frac{e^{6x}}{e^{6x}+5} dx$
 - $\int (x+1)3^{(x+1)^2} dx$
 - $\int \frac{x}{\sqrt{1-x^4}} dx$
 - $\int \frac{1}{16+x^2} dx$
 - $\int \frac{4-x}{\sqrt{4-x^2}} dx$
 - $\int \frac{x+5}{x^2+25} dx$
 - $\int \frac{x}{16+x^2} dx$
 - $\int \frac{\arctan(\frac{x}{2})}{4+x^2} dx$