

THE UNIVERSITY OF AKRON
Mathematics and Computer Science

Calculus II Practice
Elementary Differentiation
Trigonometric and Transcendental Functions

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Instructions: In the following series of problems, you answer by typing in your response. Use the following notation to enter your answers:

- Use * to indicate multiplication: Type $4*x$ for $4x$;
- Use ^ to indicate powers: Type $4*x^3$ for $4x^3$; $12*x^-6$ for $12x^{-6}$.
- Use parentheses to delimit the argument of a function; i.e., type $\sin(x)$ rather than $\sin x$.
- Use parentheses to define the *scope* of an operation: For example, type $4*x*(x^2+1)^3$ for $4x(x^2+1)^3$; $4^(2*x+1)$ for 4^{2x+1} ; $(\sin(x))^2$ for $(\sin(x))^2$. *Do not* type $\sin^2(x)$ for $\sin^2(x)$, type $(\sin(x))^2$ instead.
- Do *not* use brackets [] or braces { }, use only parentheses to delimit a mathematics expression.
- Functions you may use:
 - Trig: \sin , \cos , \tan , \cot , \sec , \csc ;
 - Log/exponential: \ln (natural log), or use \log ; \exp , the natural exponential; **Note:** You can also enter the natural exponential $\exp(x)$ as e^x for e^x .
 - Misc.: \sqrt{x} , usage \sqrt{x} (or, use exponential notation: $x^{(1/2)}$).

Important: The only variable used is x . For example, do not enter any other undefined symbols into your answer.

Example: Consider the following sample question. Practice by typing in the answer: $2x^3(x^4+1)^{-1/2}$

$$\frac{d}{dx}(x^4 + 1)^{1/2} =$$

The Response Box

Answer Button

Num. of incorrect tries

When a correct answer is input into the response box, the color of the border surrounding the response box changes to **blue**.

The answer can also be expressed correctly using the **sqrt** operator, try modifying the answer using **sqrt**.

Drill of Basic Differentiation Formulas In the following series of problems, answer by typing in your response using the correct syntax.

1. $\frac{d}{dx} 4x^{-1/2} =$

2. $\frac{d}{dx} e^{x^2} =$

3. $\frac{d}{dx} \sqrt{5x - 1} =$

4. $\frac{d}{dx} \frac{x^2}{x^2 - 1} =$

5. $\frac{d}{dx} \sin^2(x) =$

6. $\frac{d}{dx} (\ln(2x^3))^4 =$

7. $\frac{d}{dx} \tan(\sqrt{x}) =$