Calculus Formulas

(1) $\dfrac{d}{dx}(e^x) =$

(2) $\dfrac{d}{dx}(\ln x) =$

Remark 3.2.1. *The domain of $f(x) = \ln x$ is $x > 0$, so the domain of $f'(x)$ is*

(3) $\dfrac{d}{dx}(\log_a x) =$

(4) $\dfrac{d}{dx}(a^x) =$

Examples

Example 3.2.1. *If $f(x) = 2e^x + 5\ln x$, find $f'(x)$*

Example 3.2.2. *Find the derivative of $y = ee^x + \ln x^5 + \ln 10x$*

Example 3.2.3. *If $f(x) = x^e + e^x$, find $f'(x)$*

Example 3.2.4. *If $f(x) = e^2 + \ln 2$, find $f'(x)$*

Example 3.2.5. *If $f(x) = 2x^3 - e^7 - 5x^e + 4e^x + xx^e$, find $f'(x)$*

Example 3.2.6. *If $f(x) = 3\log_5 x$, find $f'(x)$*

Example 3.2.7. *If $f(x) = 4^x$, find $f'(x)$*

Example 3.2.8. *If $f(x) = e^3 - 3^x$, find $f'(x)$*

Example 3.2.9. *Find $f'(e)$ for $f(x) = 1 + \ln x^4$.*

Example 3.2.10. *If $f(x) = -4\ln x - \ln 6 + 4x^5$, then $f'(x)$ equals*

(1) $-\frac{4}{x} - \frac{1}{6} + 20x^4$
(2) $-\frac{1}{4x} - \frac{1}{6} + 20x^4$
(3) $-\frac{x}{4} + 20x^4$
(4) $-\frac{4}{x} + 20x^4$
(5) none of these