
No Calculator

1. If $f(x) = e^4$, then find $f'(x)$

2. Evaluate each: a) $\lim_{h \rightarrow 0} \frac{\cos(\pi+h) - \cos\pi}{h} =$ b) $\lim_{h \rightarrow 0} \frac{\sin(2\pi+h) - \sin 2\pi}{h} =$

3. $\int_{-3}^{-1} \sqrt{3}x^{-4} dx =$

4. Find the slope of the line tangent to the curve $x^3 + xy^2 + 2x = 12$ at the point $(1, -3)$

5. $\lim_{x \rightarrow 25} \frac{5 - \sqrt{x}}{x - 25} =$

Calculator

1. If the rate of $2x^3$ increases and twice the rate of $6x^2$ increases. What is the value of x ?

2. Suppose $f(x) = |4x - 8|$.
Is $f(x)$ differentiable at $x = 2$?
Is $f(x)$ continuous at $x = 2$?
Find the $\lim_{x \rightarrow 2} f(x)$

3. If $f(x) = \frac{f(x)-x}{f(x)}$, $f(2) = 5$ and $f'(2) = -4$, then $g'(2) =$