

Calculus Calculator Exercises and Must be Able To Do's

- On the closed interval $[0, 10]$, how many times do the graphs of $y = \cos x$ and $y = -2e^{-2x}$ intersect?
- Given $f(x) = x^{\frac{4}{5}} - 1$, without entering $f'(x)$ by hand into the calculator, list 3 different methods to evaluate $\lim_{x \rightarrow 0^-} f'(x)$.
- Use the table feature of your calculator to find $\lim_{x \rightarrow 1} \frac{x-1}{x^2-1}$.
- Find the roots of $y = x^3 + 1.1x^2 - 1.6x + 0.4$.
- Find the coordinates of the intersection of $y = 3\sin x$ and $y = 0.5x + 1$.
- Given $f(x) = \frac{x^2+3}{x}$, find the coordinates of the relative maxima and minima.
- The path of a particle along a vertical line is given by $y(t) = -2t^3 + 3t^2 + 4$. Find the position of the particle when the velocity is a maximum.
- Describe how to find the slope of the equation of the line tangent to $y = 2x - 0.5x^2$ at $x = -1.7$ using your calculator.
- Find the area bounded by the function $y = \cos(x^3)$ and $y = x^2$.
- Find the area under the curve $y = \frac{1}{x}$ from $x = k$ to $x = 2k$ for $k > 0$. (Use two different values for k .)
- Given the function $f(x) = x^3 - x^2 - 5x + 7$ on $[1, 3]$,
 - Sketch the graph of the function on the interval,
 - Find the average slope.
 - Find the value of z such that $f'(z) = \text{average slope}$.
 - Draw the tangent line at $x = z$. Draw the secant line through the endpoints of the interval. How do the two lines compare?
- If $f'(x) = x^3 - 6x + 4$, determine the interval in which $f(x)$ is concave down.
- Use the AUTO/ASK feature of your table to find $f\left(\frac{14}{3}\right)$ given $f(x) = 2x^4 + 1.7x^2 - 1.6x + 1.8$.
- Describe the keys pressed to get to Y_1 , Y_2 , etc.
- What is the sto (\rightarrow) feature and when should you use it?
- Graph the derivative of $e^{\tan x}$, without first finding the derivative by hand.