




Assess your learning - Differentiation 1

Where is your learning at? Be Honest!	 red	 orange	 green	Revised for 10 Week Exam	Revised for Summer exam
Can you answer the following questions?					
I can differentiate linear and quadratic functions from first principles. E.g. Differentiate $x^2 + 3x$ from 1st principles					
I can differentiate simple polynomials by rule. E.g. Differentiate $3x^3 + 2x^2 - 6x$					
I can differentiate functions multiplied together using the Product Rule E.g. Differentiate $(2x^2 + 3)(x^4 - 1)$					
I can differentiate functions divided by each other using the Quotient Rule E.g. Differentiate $\frac{2x^3 - 3x}{(x + 1)^2}$					
I can use the Chain Rule to differentiate higher powers E.g. Differentiate $(x^2 + 3)^5$					
I can use the Chain Rule to differentiate Trig functions E.g. Differentiate $\sin^2 3x$					
I can use the Chain Rule to differentiate Inverse Trig functions E.g. Differentiate $\cos^{-1} 4x$					
I can use the Chain Rule to differentiate log/exponential functions E.g. Differentiate $\log_e 4x$					
I can find the slope of the tangent to a circle or a curve, using implicit differentiation. E.g. Find $\frac{dy}{dx}$ for the following curve: $x^2 + y^2 = 36$.					

Assess your learning - Differentiation 2

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Can you answer the following questions?					
I can find the second derivative of a function. E.g. Find $\frac{d^2y}{dx^2}$ for $y = x^3 - 2x^2 + 4$.					
I can evaluate the second derivative of a function at a given point. E.g. Find $\frac{d^2y}{dx^2}$ for $y = x^3 - 2x^2 + 4$ at the point $(-1, 2)$.					
I can find the values of x for which a function is increasing or decreasing. E.g. The graph of the function $f(x) = 2x^3 - 3x^2 - 3x + 2$ is shown below. Find the range of values of x for which the function is decreasing.					
I can find the local max and local min points of a function. E.g. Find the local max and local min points of the curve $y = x^3 - 3x^2 + 4$.					
I can find the points of inflection of a function. E.g. Find the point of inflection of the curve $y = x^3 - 3x^2 + 4$.					
I can solve maximisation and minimisation problems using differentiation. E.g. A rectangular piece of ground is enclosed by 100 m of fencing. If the length of the enclosure is x m, and the width is y m, write an expression for the area of the piece of ground, in terms of x . Hence find the max area that can be enclosed.					
I can solve problems involving rates of change. E.g. The rate of change of a radius of a circle is 2 cm/s. Find the rate of change of the area of the circle when the radius is 3 cm.					