

# Differentiation and Antidifferentiation Work Requirements

Name:

Topic	Knowledge	Skill	Ability
17A The Derivative (p.581) <b>Learning Goal:</b> <i>understand the conception of differential calculus through 'first principles'</i> <b>Success Criteria:</b> <i>calculated the 'derivative' of functions, using first principles</i>	1, 3, 4, 5, 7	8, 9, 11, 12 (a,c,e,g)	6, 10, 13
17B Rules for differentiation (p. 589) <b>Learning Goal:</b> <i>use 'shortcuts' to finding the derivative of functions</i> <b>Success Criteria:</b> <i>calculated derivatives of functions, using rules</i>	1 (a,c,e), 2 (a,c,e,g), 6 (a,c,e,g)	3 (a,c,e,g,i), 4 (a,c), 5 (a,c), 7, 9, 10 (a,c,e), 11 (a-i,ii; b), 12 (a,c,e),	13 (a,c,e)
17C Differentiating $x^n$ , when n is negative (p. 593) <b>Learning Goal:</b> <i>differentiate functions with negative indices</i> <b>Success Criteria:</b> <i>differentiated functions with negative indices, by also using knowledge of index laws</i>	5	3-4 (a,c,e), 7 (a,c), 8	1a, 2a, 9
17D Graphs of the derivative function (p. 599) <b>Learning Goal:</b> <i>interpret graphs of derivatives</i> <b>Success Criteria:</b> <i>made conclusions, based on graphs of derivatives and functions, about the behaviour of functions</i>	1, 2	3-8, 12, 13	10 (a,b), 11, 14
17E Antidifferentiation of polynomials (p. 606) <b>Learning Goal:</b> <i>find antiderivatives of polynomials</i> <b>Success Criteria:</b> <i>use rules to find antiderivatives of polynomials</i>		1 (a,c,e,g,i), 2, 3, 4 (a,c,e), 5	7-14
17F Limits and continuity (p. 613) <b>Learning Goal:</b> <i>determine continuity, using limits</i> <b>Success Criteria:</b> <i>checked for discontinuity, by using limits</i>	2	1 (a,c,e,g,i,k), 3 (b,c)	4
17G Differentiability (p. 615) <b>Learning Goal:</b> <i>check the conditions when a function can be differentiated</i> <b>Success Criteria:</b> <i>determined when a function is differentiable</i>	1 (a,c,e,f)	2,3	4

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*These are other differentiation techniques that will be learnt in Units 3 and 4 Mathematical Methods*

Topic	Knowledge	Skill	Ability
20A The Chain Rule (p. 690) <b>Learning Goal:</b> <i>apply the technique when differentiating 'composite' functions.</i> <b>Success Criteria:</b> <i>determined derivatives of 'composite' functions.</i>		1 (a,b,c,d), 2, 3, 4a	1 (e,f), 4b, 5
20B Differentiating with Rational powers (p. 589) <b>Learning Goal:</b> <i>apply the differentiation technique of 'power functions' to functions with fractional powers.</i> <b>Success Criteria:</b> <i>determined derivatives of functions where the 'power' is a fraction</i>		1, 2, 5 (a,b), 3a	4, 5 (c,d,e),