

# Higher Mathematics Questions by Percentage

Subject	Skill	Average %	2016	2017	2018	2019 Sp	2019
<b>The Straight Line</b>	median	2	2	2	2	2	2
	gradients and perpendicular gradients	2	4	2		1	1
	point of intersection of lines	2	2	2	1	1	1
	$m = \tan \theta$	1		2	1	1	1
	perpendicular bisector	1		3	2		
	straight line collinearity	1		2		2	
	altitude	1				2	2
	distance between points	0					
<b>The Circle</b>	equation of a circle by finding centre and radius	3	2	3	2	5	4
	equation of a tangent to a circle	3	4	3	3	3	2
	use distance formula with radii to solve problems	2	2		4		4
	point of intersection between a line and a circle	1		4			
	find centre and radius from an equation of a circle	1	3				
	nature of intersection between a line and a circle	0					
<b>Recurrence Relations</b>	find the limit of recurrence relation	2		2	3	2	2
	find a and b in recurrence relation	1	2	2		1	2
	use recurrence relation	1	1	2	1		1
	form recurrence relation	0					1
<b>Differentiation</b>	optimisation	5	7		4	6	6
	stationary points and nature	2	3	3			3
	increasing and decreasing functions	2	2	2	2	1	2
	differentiate by preparing function	1	2	2		1	
	equation of tangent to curve - differentiation	1			3	3	
	sketch derived function	1				2	1
	curve sketching	1			3		
	find gradient/rate of change at given point	0		2			
	closed intervals	0		2			
<b>Integration</b>	differential equations	2	3		3	3	3
	area between two curves	2		4		3	3
	area under a curve	2	3	3	3		
	integrate indefinite integral including preparing function	1		1		3	3
	evaluate definite integral including preparing function	0				2	
<b>Quadratics</b>	use discriminant to find unknown coefficients	2	2	2	3	3	2
	complete the square	2	2	2	2	2	2
	solve quadratic inequations	1		3			
	sketch quadratic from completed square	0		2			
	sketch quadratic from roots	0					
	determine nature of roots	0					
	nature of intersection between a line and a curve	0					
	show line is a tangent to a curve	0					
	point/s of intersection between line and curve	0					
<b>Polynomials</b>	factorise/solve polynomial using synthetic division	3	3	2	5	2	3
	identify equation of polynomial from graph	1	3			2	
	show term is factor/root of polynomial	1	2	2			1
	find unknown coefficients of polynomial	1				3	
	find remainder of polynomial	0					
<b>Trigonometry/Addition Formulae</b>	solve trig equation using double angle formulae	2		4		5	3
	trig identities	1	3	2		2	
	solve trig equations including by factorising	1			4		2
	use addition formulae	1	4				1
	sketch trig function from equation	0		2			
	identify equation of trig function from graph	0					
<b>Graphs Of Functions</b>	Evaluate using double angle formulae	0					
	sketch log/exponential graphs	1	2		1		
<b>Sets And Functions</b>	sketch related graphs	1				1	1
	find inverse function	2	3	2	2	2	2
<b>Vectors</b>	find and evaluate composite functions	2	2	2	2	1	1
	determine suitable domain, restrictions on range	0					1
	state range	0					
	angle between two vectors	3	3	4	3	3	3
<b>Further Calculus</b>	Unit vector	2	2				
	Working with vector componenets	2	5	2			
	finding/using scalar product	2		3		3	4
	using/finding ratios with vectors	1	2	2	1		2
	vector pathways	1			2		1
	collinearity using vectors	0					2
	integrate trig function	2	2			4	6
<b>Wave Function</b>	integrate composite function	1	1	3	3		
	differentiate trig function	1	2	2	2		
	differnetiation composite fuction	1	2	2			2
	further calculus and rate of change	0				2	
	futher calculus and area under/between curves	0					
	futher calculus and differential equations	0					
<b>Log and Exponential Functions</b>	express as $k\sin(x \pm a)$ or $k\cos(x \pm a)$	3	3	3	3	3	3
	use wave function to solve trig equations	2	3		2	3	2
<b>Log and Exponential Functions</b>	use laws of logs to solve exponential growth/decay problems	3	4		4	5	3
	solve log equations	3	4	2	2	3	2
	use experimental data to find unknown values of a function	1		4			3
	Evaluate log expressions	1	1		2	1	2
	identify log/exponential function from graph	0					