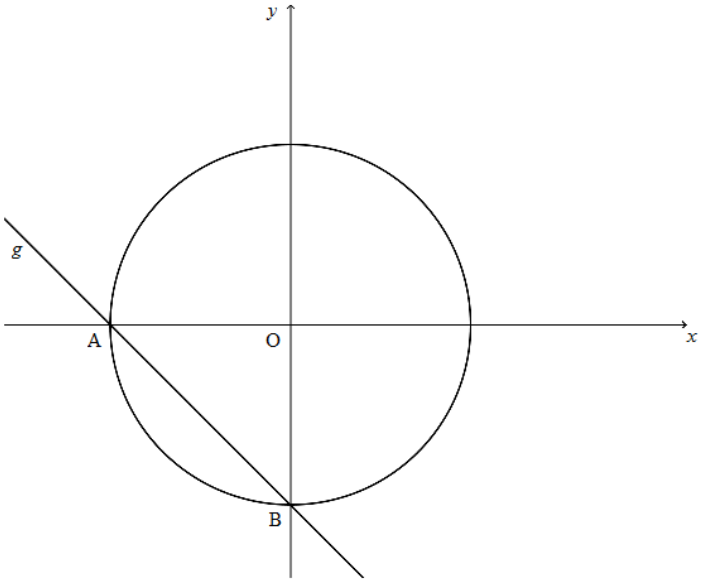
TECHNICAL MATHEMATICS

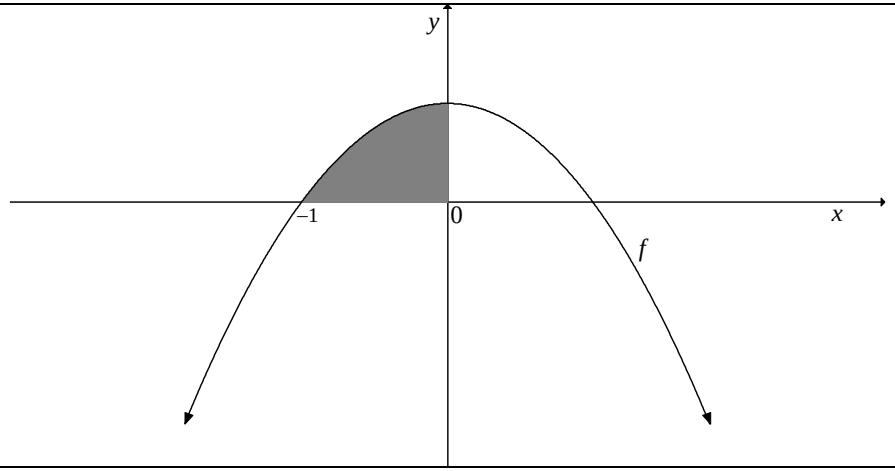
GRADE 12

COLLECTABLE MARKS

QUESTION	POSSIBLE QUESTIONS	METHOD	MARKS
Q.1			
1.1	Quadratic Equations e.g 1. $x^2 - 81 = 0$ 2. $-2x^2 - x = -4$	• Solving for "x" using a quadratic Formula / Factorization • Rounding off to TWO decimal places	± 6
1.2	Quadratic Inequality e.g $(x-3)(x+5) \leq 0$	Finding the critical values by Factorization/ Formula then find the solutions	± 3
1.3	Simultaneous equations $x^2 + 2xy = 3y^2 - 7$ and $3x - y = 1$	1.1 Solve for x and y simultaneously	± 6
1.4	Manipulation of Formula $C = \frac{5}{9}(F - 32)$	At least substitution in a formula	± 2
1.5	Binary Numbers Write 100 as a binary number	• Write 100 as a binary number • OR Write as a Decimal	± 2
SUB TOTAL			± 18
Q.3			
3.1	Surds	Simplifying Surds	± 3

	$\sqrt{72}(\sqrt{32}-\sqrt{18})$		
3.3	Complex Number $\bar{z}=\sqrt{3}+i.$	• Sketch • Express in Polar	± 8
	SUB- TOTAL		± 11
Q.4			
4.2 AND 4.3	Circle and a Tangent / Straight line  	• Determine the equation of a circle given either a point or radius • Finding Point of intersection ie Solving the two equations simultaneously	± 6 OR ± 3
	SUB- TOTAL		± 6 / 3
Q.5			
5.1	Ellipse	Sketch the graph	± 4

	$4x^2 + 16y^2 = 64$		
SUB- TOTAL			± 4
Q.7			
7.1	FIRST PRINCIPLE $f(x) = -2x - 1.$	• Writing the formula down • Substitution in correct formula	± 5
7.2	Derivatives $\frac{d}{dx}(-x^4 + 2x^3 - \sqrt[3]{x^2} + 5x - 1)$	At-least few simple terms $-x^4$ $2x^3$ $5x$ -1	± 4
SUB- TOTAL			± 9
Q.8			
8.1	CUBIC Function $f(x) = -x^3 + 2x^2 + 5x - 6$	• Showing that x – a is a factor • Factorizing and solve for x	± 6
SUB- TOTAL			± 6
Q.10			
10.1	INTEGRATION $\int (x^2 - 6x - 5)\, dx$	Finding the integral	± 4

10.2		Determine the shaded area $h(x) = -3x^2 + 3$	± 6
SUB-TOTAL			± 10
TOTAL			± 64