



**EXAMINATIONS COUNCIL OF
ESWATINI**

CONFIDENTIAL
November 2019

JUNIOR CERTIFICATE EXAMINATION
ADDITIONAL MATHEMATICS
MARK SCHEME

MAXIMUM MARK 100

Question	Answer	Marks	
1(a)	$\begin{pmatrix} -1 & -9 \\ 4 & -7 \end{pmatrix}$	2	
(b)	$\begin{pmatrix} 6 & -3 \\ 3 & 12 \end{pmatrix}$	2	
(c)	(-41)	2	
(d)	$\begin{pmatrix} 8 & 13 \\ 9 & 9 \end{pmatrix}$	3	
(e)	$x = 1$ and $y = 4$	3	
2(a) (i)	$11 - 6x$	2	
(ii)	$x^2 + 7x - 18$	2	
(b)	$\frac{3}{(x-1)(2x+1)}$	3	
(c)	$y = \frac{3x}{a+x}$	3	
3(a)	$x = 3, y = 1$	3	
(b)	$(x-5)(x-3)$	2	
(c) (i)	$x = 3$	1	
(ii)	$a = 5$ or $a = -5$	2	

4(a)	$\frac{9}{21}, \frac{16}{36}, \frac{20}{36}, \frac{16}{36}$	2	
(b)			
(i)	$\frac{180}{756}$ or $\frac{5}{21}$	2	
(ii)	$\frac{384}{756}$ or $\frac{32}{63}$	3	
5(a)			
(i)	$f : x \longrightarrow x^2$ or $f(x) = x^2$	1	
(ii)	$g : x \longrightarrow \frac{x}{4} + 3$ or $g(x) = \frac{x}{4} + 3$	2	
(b)			
(i)	11	1	
(ii)	$x = -3$	2	
(c)	$m > 18$	3	
6(a)			
(i)		2	
(ii)	58.3 km	3	
(iii)	301^0	3	
(b)	4.12 m	3	

(c) (i)	7.68 m	3	
(ii)	23°	1	
7(a)	$a = -4$ $b = 5$	1 1	
(b)	Correct scale All correct points plotted	1 2	
	Smooth curve through all points	1	
(c)	Correct ruled line through (- 2 , -2) and (4 , 4).	1	
(d)	$x = -0.7$ to -0.9 Or $x = 3.7$ to 3.9	1 1	
(e)	$x = 1$	1	
8(a) (i)	(6, -12)	2	
(ii)	9.43	3	
(b) (i)	$\mathbf{b} - \mathbf{a}$	1	
(ii)	$\frac{1}{2}\mathbf{a} + \frac{1}{2}\mathbf{b}$	2	
(iii)	$\frac{1}{4}\mathbf{b} - \frac{3}{4}\mathbf{a}$	3	
(iv)	$\frac{1}{4}\mathbf{b} - \frac{3}{4}\mathbf{a}$	2	

(v)	$\frac{1}{2}\mathbf{b} - \frac{1}{2}\mathbf{a} - \frac{1}{3}\mathbf{b}$ oe $\frac{1}{6}\mathbf{b} - \frac{1}{2}\mathbf{a}$ AG	3	
(vi)	$\overrightarrow{MP} = \frac{1}{2} \left(\frac{1}{3}\mathbf{b} - \mathbf{a} \right)$ $\overrightarrow{MP} = \frac{1}{2}\overrightarrow{AN}$	2	
9(a)	16, 34, 50	2	
(b)	Correct scale Correct points plotted Smooth curve through all points	1 2 1	
(c)	19 to 21	2	
(d)	17.5 to 18.5	2	