



education

Department:
Education
REPUBLIC OF SOUTH AFRICA

**NATIONAL SENIOR CERTIFICATE
GRADE 10 - 2006**

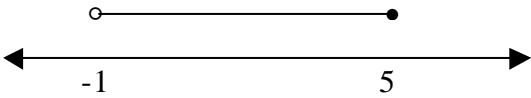
MARKING MEMORANDUM

MATHEMATICS P1 – Number and Algebra

OCTOBER/NOVEMBER 2006

This question paper consists of 6 pages.

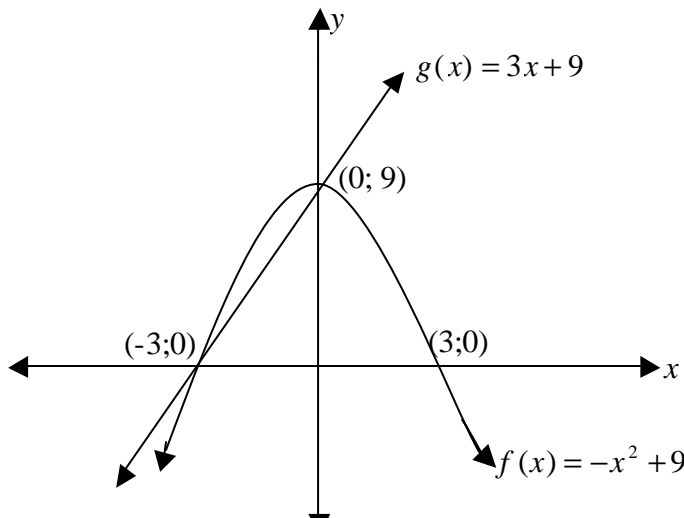
<p>1.1.1</p> $(2x-3)(5x^2-2x+1)$ $= 10x^3 - 4x^2 + 2x - 15x^2 + 6x - 3$ $= 10x^3 - 19x^2 + 8x - 3$ <p style="text-align: right;">(4)</p>	<p>vv Simplification v v Grouping of like terms</p>
<p>1.1.2</p> $\frac{3^{x-1} \cdot 2^{x+1}}{2^x \cdot 3^x}$ $= 3^{x-1-x} \cdot 2^{x+1-x}$ $= 3^{-1} \cdot 2^1$ $= \frac{2}{3}$ <p style="text-align: right;">(4)</p>	<p>v splitting up denominator v Application of exponent law v Simplification v answer 2/3</p>
<p>1.1.3</p> $\frac{3x+7}{5} - \frac{x-2}{3}$ $= \frac{3(3x+7) - 5(x-2)}{15}$ $= \frac{9x+21-5x+10}{15}$ $= \frac{4x+31}{15}$ <p style="text-align: right;">(4)</p>	<p>v Applying LCM v Simplification v Simplifying like terms v denominator</p>
<p>1.2.1</p> $2x^2 - 5x - 3$ $= (2x+1)(x-3)$ <p style="text-align: right;">(2)</p>	<p>vv One mark for each term</p>
<p>1.2.2</p> $5xy - 3y + 10x - 6$ $= y(5x-3) + 2(5x-3)$ $= (5x-3)(y+2)$ <p style="text-align: right;">(3)</p>	<p>vv 1 For each term v Factorising</p>

<p>1.3</p> $(2x-1)^2 - (x-3)^2$ $[(2x-1)-(x-3)][(2x-1)+(x-3)]$ $[2x-1-x+3][2x-1+x-3]$ $(x+2)(3x-4)$ <p style="text-align: right;">(4)</p>	<p>v Difference of 2 squares</p> <p>v v simplifying</p> <p>[21]</p>
<p><u>QUESTION 2</u></p>	
<p>2.1.1</p> $(x+1)(x-2) = 4$ $x^2 - x - 2 - 4 = 0$ $x^2 - x - 6 = 0$ $(x+2)(x-3) = 0$ $\therefore x = -2 \text{ or } x = 3$ <p style="text-align: right;">(5)</p>	<p>v Transposing terms</p> <p>v Trinomial</p> <p>v factoring trinomial</p> <p>v v both answers</p>
<p>2.1.2</p> <p>By trial and error</p> $2^2 = 4$ $2^3 = 8$ $2^4 = 16$ <p>x is between 3 and 4</p> <p>By trial and error a possible answer is $x = 3.7$</p> $2^{3.7} = 13$ <p style="text-align: right;">(3)</p>	<p>v Calculating powers</p> <p>v Estimation, between values</p> <p>v Estimation of value</p>
<p>2.2</p> $-5 < 2x - 3 \leq 7$ $-5 + 3 < 2x \leq 7 + 3$ $-2 < 2x \leq 10$ $-1 < x \leq 5$ <div style="text-align: center;">  </div> <p style="text-align: right;">(5)</p>	<p>v adding 3</p> <p>v Simplification</p> <p>v dividing by 2</p> <p>v final answer</p> <p>v Number line representation</p>

<p>2.3.1 $3x + 5y = 10$(Equ 1) $x + 10y = 10$(Equ 2) (2)</p> <p>2.3.2 (Equ 2 x 3) : $3x + 30y = 30$(3) (Now Equ 1 – Equ 3) : $- 25y = -20$ (Cost of Pencil) $y = \frac{20}{25} = \frac{4}{5} = R0,80$</p> <p>Now Substitute $y = R 0, 80$ in equ 1 $\therefore 3x + 5(R0.80) = 10$ $x = R2,00$(Cost of Ruler) (5)</p>	<p>v Algebraic representation v Algebraic representation</p> <p>v Method, multiplying by 3 v Method, Subtracting equations v Solving for y</p> <p>v substitution for y value v $x = R2,00$</p> <p>[20]</p>
<p><u>QUESTION 3</u></p>	
<p>3.1 $4(5)+1 = 21$ (2)</p> <p>3.2 Each picture has the same number of squares around the centre square. For example the 10th picture will have 4 rows of 10 squares around the centre square. (2)</p> <p>3.3 The nth picture will have $4(n) + 1$ (2)</p>	<p>v substitution of 5 v final answer</p> <p>vv answer in words</p> <p>v1 mark for each term [6]</p>
<p><u>QUESTION 4</u></p>	
<p>4.1 $S.I = \frac{P \cdot r \cdot t}{100}$</p> <p>$S.I = \frac{5000 \times 15 \times 5}{100}$ $= R3750$</p> <p>\therefore Interest earned by Andrew is R3750</p> <p>Compound Interest</p> <p>$FV = PV(1 + \frac{r}{100})^n$ $= 5000(1,12)^5$ $= R8811,71$</p> <p>\therefore Cheryl receives R3811,71 in interest (8)</p> <p>Cheryl therefore received more interest(compound)</p>	<p>v Formula</p> <p>v Substitution in formula</p> <p>v Simple Interest earned by Andrew, R3750,00</p> <p>v Formula</p> <p>v Substitution In formula</p> <p>v R 8811,71</p> <p>v Interest earned by Cheryl</p> <p>v Conclusion</p>

<p>4.2 Balance owing after deposit = R8500,00</p> <p>Insurance = (2% of R10500) x 3yrs = R630,00</p> <p>Total Owing = R8500,00</p> <p>Interest on R8500,00 = $\frac{Pr t}{100} = \frac{R8500 \times 18 \times 3}{100} = R4590,00$</p> <p>Monthly Payment = $\frac{8500 + 4590 + 630}{36} = R381,11$ (7)</p> <p>4.3.1 USA buyer = $\frac{R275,00}{6,3} = \\$ 43.65$ (2)</p> <p>4.3.2 UK buyer Pays = $\frac{R275}{11.85} = £23.21$ No, it will be cheaper to make the table in their Country at a price of £20 (3)</p> <p>4.3.4 New Price is R275,00 + 10% = R302,50 Cost in Dollars is \$ 48 (2)</p>	<p>v Balance after Deposit</p> <p>v Calculation of insurance</p> <p>v Calculation of Balance owing</p> <p>vv Calculation, Simple Interest</p> <p>v vMonthly Payment</p> <p>v Conversion v answer</p> <p>v Conversion v answer v Conclusion</p> <p>v new price v Cost in dollars</p> <p>[23]</p>
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QUESTION 5

<p>5.1</p>  <p style="text-align: right;">(5)</p>	<p>v Labelling x & y intercepts.</p> <p>v Shape of the straight line</p> <p>v x and y intercepts, straight line</p> <p>v Shape of Parabola</p> <p>v Intercepts on y axis</p>
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5.2.1	$x = -3 ; 0$	(2)	vv 1 mark for each co-ordinate
5.2.2	$\{ x \mid -3 < x < 3 \}$ or $x \in (-3 ; 3)$	(2)	v mark for end points v mark for inequality sign
5.3	Graph moves 18 units downwards	(1)	v 18 units downwards
5.4	$y = x^2 - 9$	(1)	v equation of graph
			[11]
QUESTION 6			
6.1.1	$x \in R$	(1)	v $x \in R$
6.1.2.	The graph moves 2 units downwards Horizontal asymptote is $y = -2$	(2)	v explanation v Equation , $y = - 2$
6.1.3	Subst. point A(1;2) in $g(x)$		v Substituting (0;1)
	$g(x) = \frac{2}{x}$; $k = 2$	(2)	v Correct équation
6.2.1	$a = 1$, since the maximum value of graph is 1	(2)	v v $a = 1$
6.2.2	1, since there is a vertical shift of the sin curve by 1 unit.	(2)	v v value of 1
6.2.3	$0 = y = 2$	(2)	v end points v inequality signs
6.2.4	$x = 90^\circ$ or 180°	(2)	vv $x = 90^\circ, x = 180^\circ$ [13]
QUESTION 7			
7.1	Speed = $\frac{Dist}{Time} = \frac{1200}{10} = 120m/s$	(2)	v Formula v 120m/s
7.2	1200m	(1)	v 1200m
7.3	During 08:10 and 08:20 he was not moving, i.e. he was stationary for this time.	(2)	v not moving v any explanation for being stationary
7.4	Average Speed = $\frac{TotalDistance}{Timetaken} = \frac{1800}{40} = 45m/s$	(2)	v 1800/40 v45m/s [7]

