Grade 10 Paper 1 MEMO final

1.1.1	$\left(-3y^{-2}\right)^2$ $+9y^{-4}$ $=\frac{9}{4}$	• +9 `y - 4	2
1.1.2	$(2a-3)^2-(3a-4)(3a+4)$ $4a^2-12a+9-\left(9a^2-16\right)$ $4a^2-12a+9-9a^2+16$ $=-5a^2-12a+25$	• Bracket 1 • Bracket 2 • sign 2nd • answer	4
1.1.3	$(2x-1)\left(4x^2+2x+1\right)$ $8x^3+4x^2+2x-4x^2-2x-1$ $8x^3-1$	• Brackets • • answer	3
1.1.4	$\frac{3^{x+1}-4.3^x}{3^{x+2}}$ $=\frac{3^x\left(3^1-4\right)}{3^{x+2}}$ $=\frac{3^x.(-1)}{3^x.3^2}=\frac{-1}{9}$	• factorise • Break down denom • $\frac{-1}{3^2}=-\frac{1}{9}$	3
1.2.1	x^3-27 $(x-3)\left(x^2+3x+9\right)$	• bracket 1 • bracket 2	2
1.2.2	$2x^3-18x$ $2x\left(x^2-9\right)$ $=2x(x+3)(x-3)$	• highest common factor • factorise	(3)

1.2.3	$3x^3-9x^2$ $3x^2(x-3)$	• Common factor 3 and x^2 • answer	2
1.2.4	$6x^2(x-3)(x+3)(x^2+3x+9)$	* Full answer	2
1.3.1.	$(x-6)(x-8)$	* Bracket 1 and 2	2
1.3.2.	$(7x-5)(x+3)$	• Bracket 1 • Bracket 2 • sign	3
1.3.3.	$(2x^2+2px)-(2mx+2mp)$ $=2x(x+p)-2m(x+p)$ $=(x+p)(2x-2m)$ $=2(x+p)(x-m)$	• Group and change sign • factorise • brackets • take out 2	4
1.4.1	3		1
1.4.2	$x \in R \quad x \neq 3$		2
			[33]

Question 2

2.1.1	$x(4x-3)=0$ $x=0 \qquad 4x-3=0$ $x=\frac{3}{4}$	• CF • Answer I and 2	3
2.1.2	$\frac{-6}{x+2}=\frac{x-3}{4}-\frac{3}{2}$ $LCD \qquad 4(x+2)$ $-24=(x-3)(x+2)-6(x+2)$ $-24=x^2-x-6-6x-12$ $0=x^2-7x+6$ $0=(x-6)(x-1)$ $x=-6 \quad OR \quad x=1$	• $\times LCD$ • bracket • 1 and 2 • ans 1 • and 2	5
2.1.3	$\frac{x+3}{2}+5>8$ $\times 2$ $x+3+10>16$ $x+13>16$ $x>16-13$ $x>3$	• x LCD • • answer	3

2.1.4.	$200\times 2^{x+8}+400=13200$ $200\times 2^{x+8}=13200-400=12800$ $2^{x+8}=\frac{12800}{200}=64$ $2^{x+8}=2^{6}$ $x+8=6 \qquad x=-2$	• isolate 64 • prime factos • answer	3
2.2	$Let \quad y=-3x+2$ sub into 2 $6x-(-3x+2)=25$ $6x+3x-2=25$ $9x=27$ $x=3$ Sub into $6x-y=25$ $6(3)-y=25$ $18-25=y$ $-7=y$ $(3;-7)$	• Sub in • Answer 1 • Answer 2 • Co-ordinates	4 [18]

Question 3

3.1.	3.1.2 and 3.1.3 1-1 and m-1	• choices • reasons	2 1
3.2.1	$f(2)=-(2)^{2}+3$ $=-1$	• sub in • answer	2
3.2.2	$2(-x^{2}+3)-4$ $-2x^{2}+6-4$ $-2x^{2}+2$	• sub in • answer	2

Question 4

4.1	$(1;\ 0)$	•	1
4.2	$y = ax^2 + q$ $y = a(x-1)(x+1)$ *Sub in* $(0;3)$ $-3 = a(0-1)(0+1)$ $-3 = a$ $y = -3(x+1)(x-1)$ $f(x) = -3x^2 + 3$	• sub in • - 3 • ans	4
4.3	$f(x) = mx + 3$ *Gradient* $\frac{y_2 - y_1}{x_2 - x_1} = \frac{-3}{1}$ $f(x) = -3x + 3$	• gradient • answer	2
4.4	$x = 0$	• answer •	2
4.5	$0 < x < 1 \qquad x \in \mathbb{R}$	• value • signs	2
4.6	$x < 0$	• value • signs	2
4.7	$h(x) = 3x^2 - 3 + 2$ $h(x) = 3x^2 - 1$	• 3 x • - 1	2 [15]

Question 5

5.1	$y = 2 \quad x = 0$	• valus	2
5.2	$x = 3$ *only*	• 3 no other interceps	3
5.3	sketch	• Shape asymptotes labels	3
5.4	$y = x + 2$	• *X* and 2	2
5.5	$x \in \mathbb{R} \qquad x \neq 0$	•	1 [11]

Question 6

6.1	$f(x)=b^x+q$ $y=-3$	•	1
6.2	$f(x)=b^x+q$ $5=b^{-x}-3$ $8=b^{-3}$ $b=\frac{1}{8}$ $b=\frac{1}{2}$ $y=f(x)=\left(\frac{1}{2}\right)^{-x}-3$	• sub in values • find b • equate	3
6.3	$\left(\frac{1}{2}\right)^{-x}-3$	• value 1 • value2	1 [5]

Question 7

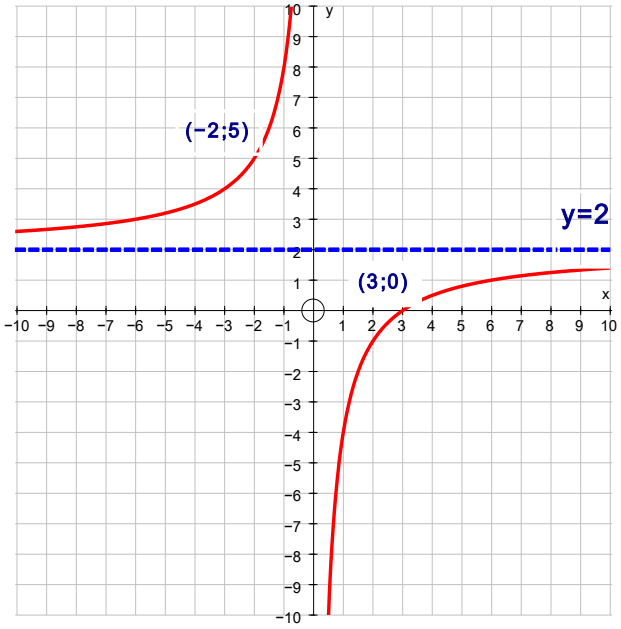
7.1	VENN DIAGRAM ON SHEET		3
7.2.1	0.2	•	1
7.2.2	0.1	•	1
7.2.3	no	•	1 [6]

Question 8

8.1	$A\{10;12;14;16;18;20\}$ $B\{12;15;18\}$		2
8.2	$\frac{7}{11}$		3 [5]

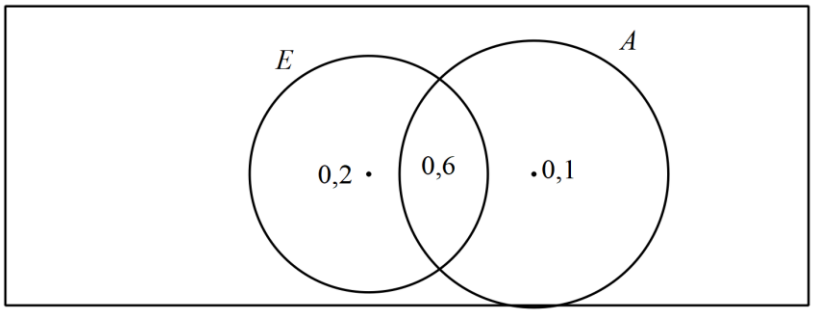
ANSWER SHEET

QUESTION 5



1 FOR SHAPE 1 FOR ACCURACY 1 FOR LABELS

QUESTION 7.1.



7.2.1 20%

7.2.2. 10%

7.2.3. no

Question 8

8.1. A= 10;12;14;16;18;20

B= 12 15 18

8.2. $\frac{9}{11}$