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GRADE 10

MATHEMATICS

NOVEMBER PAPER 1

2022

MEMORANDUM

MARKS: 75

TIME: 1½ HOURS

THIS MEMORANDUM CONSISTS OF FIVE PAGES

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QUESTION 1:

1.1.1.	$2x\,(x+2)$ ✓A	[1]
1.1.2.	$(3p-2)(9p^2-6p+4)$	
	$= 27p^3 - 18p^2$ ✓A $+ 12p - 18p^2 + 12p - 8$ ✓A	
	$= 27p^3 - 36p^2 + 24p - 8$ ✓CA	[3]
1.1.3.	$\frac{2^{x+1}.\,2^{x}.\,2^{-2}}{8^{x-1}}$	
	$= \frac{2^{x+1+x-2}}{(2^3)^{x-1}}$ ✓S	
	$= \frac{2^{2x-1}}{2^{3x-3}}$	
	$= 2^{2x-1-3x+3}$ ✓S	
	$= 2^{-x+2}$	
	$= 2^{-x}.2^{2}$	
	$= \frac{4}{2^x}$ ✓CA	[3]
1.2.1.	$3x^2 - 3$	
	$= 3\,(x^2-1)$ ✓F	
	$= 3\,(x+1)(x-1)$ ✓F	[2]
1.2.2.	$20x^2 + 30x - 20$	
	$= 10\,(2x^2+3x-2)$ ✓F	
	$= 10\,(2x-1)$ ✓$(x+2)$ ✓F	[3]
1.2.3.	$(x-2y) - ax + 2ay$	
	$= (x-2y) - a\,(x-2y)$ ✓F	
	$= (x-2y)$ ✓F$(1-a)$ ✓F	[3]

QUESTION 2:

2.1.1.	$\frac{3}{5}(2x+7) - 3 = \frac{5x-2}{3}$	
	$15 \times \frac{3}{5}(2x+7) - (15 \times 3) = 15 \times \frac{5x-2}{3}$ LCD=15 ✓A	
	$3.3\,(2x+7) - 45 = 5\,(5x-2)$ ✓A	
	$9\,(2x+7) - 45 = 25x - 10$	
	$18x + 63 - 45 = 25x - 10$	
	$18x - 25x = 45 - 63 - 10$ ✓S	
	$-7x = -28\ (\div 7)$ ✓CA	
	$\therefore x = 4$ ✓CA	[5]

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2.1.2.	$x^2 + 24 = 10x$	
	$x^2 - 10x + 24 = 0$ ✓SF	
	$(x-6)(x-4) = 0$ ✓F	
	$x = 6$ *or* $x = 4$ ✓CA	[3]

2.2.	$3x - 4y = -4$ .....(1)	
	$-2x - y = 10$ .....(2)	
	$3x - 4y = -4$ .....(1)	
	$(2)x - 4 : 8x + 4y = -40$ .....(3)✓A	
	$(1) + (3): 11x = -44$ ✓CA	
	$\therefore x = -4$ ✓CA	
	substitute $x = -4$ *into* (2)	
	$-2(-4) - y = 10$	
	$y = -2$ ✓CA	[4]
2.3.	*Greater part*: x	
	Smaller part: $57 - x$	
	$\therefore \frac{1}{2}x - 11 = \frac{1}{5}(57 - x)$ ✓A	
	$(\times 10)$ $5x - 110 = 2(57 - x)$ ✓A	
	$5x - 110 = 114 - 2x$ ✓A	
	$7x = 224$ ✓A	
	$(\div 7)$ $x = 32$ ✓A	
	$\therefore$ *Greater part* $= 32$ ✓A	
	Smaller part $= 57 - 32 = 25$	[6]

QUESTION 3:

3.1.1.	 ✓A	[1]

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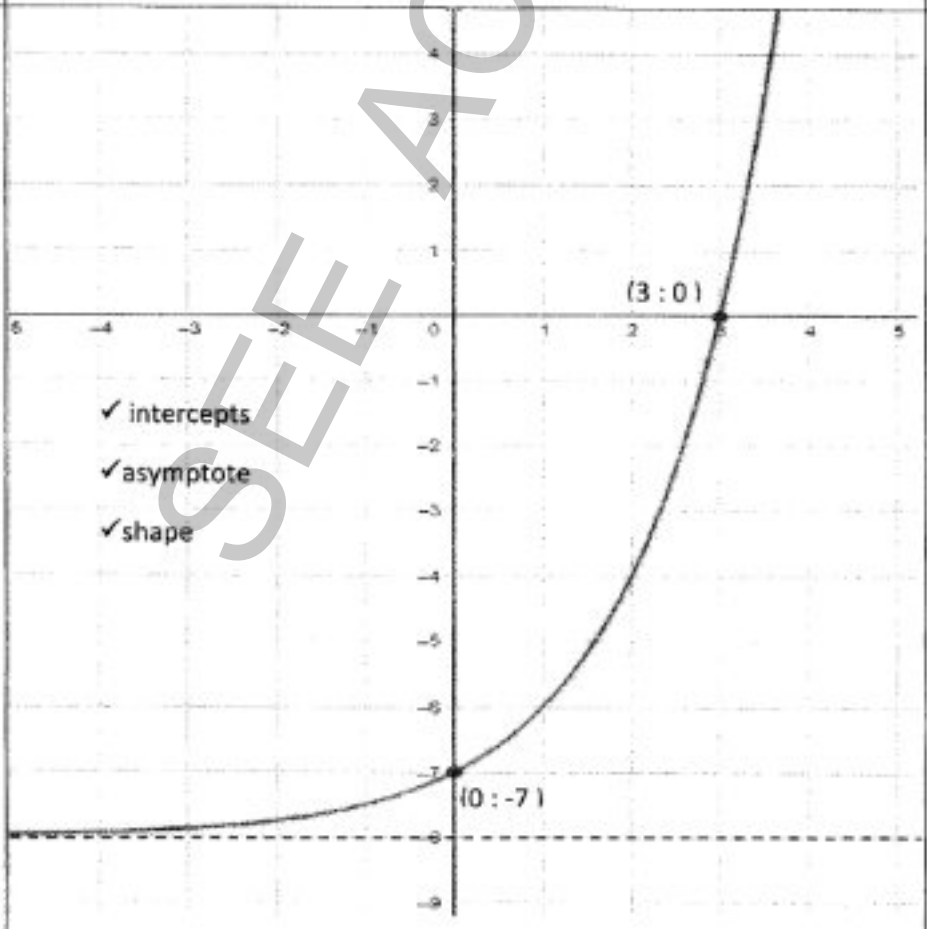
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3.1.2.	$Tn = 3n$ ✓A $- 2$ ✓A	[2]
3.1.3.	$T_{30} = 3\,(30) - 2$ ✓CA $= 88$ ✓CA	[2]
3.1.4.	$Tn = 3n - 2$	
	$136 = 3n - 2$ ✓CA	
	$136 + 2 = 3n$	
	$3n = 138$ ✓CA	
	$(\div 3)\ \therefore n = 46$ ✓CA	[3]
QUESTION 4:		
4.1.	$n = 2022 - 2015 = 7$	
	$A = P\,(1+i)^n$ ✓A	
	$9000 = P\,(1+0{,}055)^7$ ✓S	
	$9000 = P\,(1{,}055)^7$	
	$P = \frac{9000}{(1{,}055)^7}$ ✓CA	
	$P = R\,6186{,}93$ ✓CA	[4]
4.2.	255 x 423,50 ✓A x 17,93 ✓A	
	$= R\,1936\,305{,}53$ ✓CA	[3]
QUESTION 5:		

5.1.1.	$A\,(0;4)$ ✓A	[1]
5.1.2.	$D\,(0;2)$ ✓A	[1]
5.1.3.	$4\ units$ ✓A	[1]
5.1.4.	$-x^2 + 4 = 0$	
	$-(x^2 - 4) = 0$ ✓A	
	$(x+2)(x-2) = 0$ ✓A	
	$x = -2\ or\ x = 2$	
	$\therefore B\,(-2;0)$ ✓A	[3]
5.1.5.	$f(x) = g(x)$	
	$-x^2 + 4 = x + 2$ ✓A	
	$-x^2 - x + 4 - 2 = 0$	
	$-x^2 - x + 2 = 0$	
	$(x-1)(x+2) = 0$ ✓CA	
	$x = 1\ or\ x = -2$ ✓CA	
	$subs\ x = 1\ into\ x + 2\ \therefore y = 3$	

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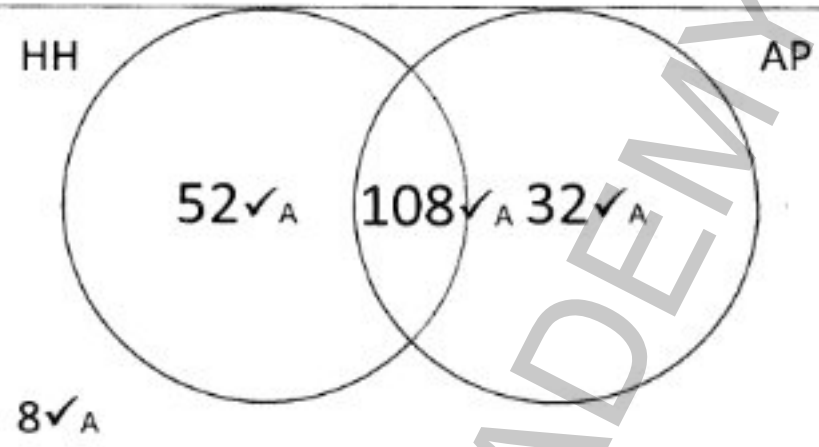
	$\therefore E(1;3)$ ✓CA	[4]
5.1.6.	$f(x) < g(x)$	
	1 ✓A $< x < -2$ ✓A	[2]
5.2.1.	$y > -8$ ✓A	[1]
5.2.2.	$t(x) = k^x + q$	
	$t(x) = k^x - 8$	
	$0 = k^3 - 8$ ✓A	
	$k^3 = 8$	
	$\sqrt[3]{k^3} = \sqrt[3]{8}$	
	$\therefore k = \pm 2$ ✓A	
	$t(x) = 2^x - 8$ ✓A	[3]
5.2.3.		

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QUESTION 6:

6.1.1. [4]



6.1.2. a) $P(only\ AP) = \frac{32}{200} = \frac{4\checkmark A}{250\checkmark A}$ [2]

b) $P(none) = \frac{8}{200} = \frac{1\checkmark A}{25\checkmark A}$ [2]

TOTAL: 75

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