2024 Grade 10 NOV Paper 1 MEMO

QUESTION 1

1.1.1	$2x^4 - 32$ $= 2\left(x^4 - 16\right)$ $= 2\left(x^2 - 4\right)\left(x^2 + 4\right)$ $= 2(x-2)(x+2)(x^2+4)$	• Common factor • dots • dots	3
1.1.2	$2x^2 + 3x - 5$ $= (2x+5)(x-1)$	• 2x + 5 • x – 1	2
1.1.3	$\frac{x^3+1}{x^2-x+1}$ $= \frac{(x+1)\left(x^2-x+1\right)}{x^2-x+1}$ $= x+1$	• fact • ans	2
1.2.1	$\frac{x^2+x-6}{3x^2-12x} \times \frac{x^2-16}{x^2-2x} \times \frac{1}{x+4}$ $= \frac{(x+3)(x-2)}{3x(x-4)} \times \frac{(x-4)(x+4)}{x(x-2)} \times \frac{1}{x+4}$ $= \frac{(x+3)}{3x^2}$	• tri • DOTS • CF • CF • ans	5
1.2.2	$\frac{6^{2-x}.12^x}{2^{x+2}}$ $= \frac{2^{2-x}.3^{2-x}.2^{2x}.3^x}{2^{x+2}}$ $= 9$	• primes 6 • primes 12 • simplify • answer	4
1.2.3	$\frac{3^m - 3^{m-2}}{2.3^m - 3^m}$ $= \frac{3^m\left(1-\frac{1}{9}\right)}{3^m(2-1)}$ $= \frac{8}{9}$	• common fact • both brackets • ans	3
1.3.1	$x = -3$	• - 3	1
1.3.2	$x = -4$	• - 4	1
1.4	$2^2.3^2.5^3.2^8.3^5$ $= 2^7.3^7.2^3.5^3$ $= 6^7.10^3 = 1000x$	•	

TOTAL: 24

QUESTION 2

2.1.1	$x(x-4)=12$ $x^2-4x-12=0$ $(x-6)(x+2)=0$ $x=6 \quad or \quad x=-2$	• STD • factors • answers	3
2.1.2	$\frac{x-3}{1-x^2}-\frac{2x+4}{x+1}=\frac{2x}{1-x}$ $=\frac{x-3}{(1-x)(1+x)}-\frac{2x+4}{x+1}=\frac{2x}{1-x}$ $(x-3)-(2x+4)(1-x)=2x(1+x)$ $x-3-2x+2x^2-4+4x=2x+2x^2$ $x=7$ $OR \quad if \ swapped \quad x-1$ $-x+3-2x^2+2x+4-4x=-2x^2-2x$ $x=7$	• DOTS • LCD • LHS • RHS • answer OR • DOTS • LCD • LHS • RHS • answer	5
2.1.3	$-4\le\frac{1-x}{3}<3$ $-12\le 1-x<9$ $-13\le -x<8$ $-8<x\le 13$	• x 3 • - 1 • answer	3
2.2	$Avspeed=\frac{Total\ D}{Total\ Time}$ $=\frac{d+d}{\frac{d}{x}+\frac{d}{y}}$ $=\frac{2d}{1}\times\frac{xy}{d(x+y)}$ $=\frac{2xy}{x+y}$	• numerator 2d • LCD • tip • fact	4
2.3	$x=2y+3$ $3x-5y=10$ $3(2y+3)-5y=10$ $6y+9-5y=10$ $y=1$ $x=2(1)+3$ $x=5$	• x = • sup • y • x	4

TOTAL: 19

QUESTION 3

3.1.1	$A = P(1+in)$ $= 18\ 000(1+4,5\% \times 7)$ $= 23\ 670$ $INT = 23670 = 18000$ $= R5670$	• subs in F • A • int	3
3.1.2	$A = P(1+i)^n$ $27\ 660 = P(1+6,7\%)^7$ $\frac{27\ 660}{(1+6,7\%)} = P$ $R17\ 567,15 = P$ only 1/3 if 27 660 = P for CP form	• subs in F • divide • answer	3
3.1.3	$27\ 660 = 18\ 000(1+i \times 7)$ $\frac{461}{300} = (1+7i)$ $\frac{161}{300} = 7i$ $0,076 = i$ $r = 7,67\%$ **final answ must be r**	• Subs in form • 7i = • r =	3
3.2	$A = 5000(1+12\%)^6(1+0,082)^{25}$ $= R70\ 788,00$ OR $A = 5000(1+12\%)^6$ $\therefore\ A_2 = 9869,114326(1+0,082)^{25}$ $= R70\ 788,00$	• 5 000 • ( ) • ( ) **CA answer if + between brackets** • **Answer** OR • 5 000( )^6 • 9869,1134 • (1 + 0,082)^{25} • answer	4

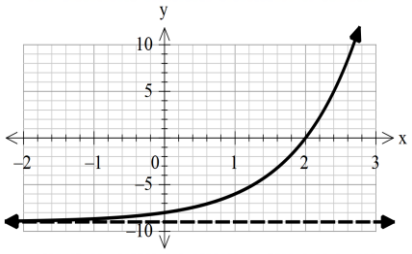
TOTAL: 13

QUESTION 4

4.1	$x \in \mathbb{R};\ x \neq 0$	• ans	1
4.2	$y \geq 1$	• ans	1
4.3	$f(x) = \frac{b}{x} + 1$ $f(2) = \frac{b}{2} + 1$ $0 = \frac{b}{2} + 1$ $-1 = \frac{b}{2}$ $-2 = b$	• sub (2; 0) • ans	2
4.4	$f(-1) = \frac{-2}{-1} + 1$ $y = 3 \quad (-1;3)$ $g(x) = ax^2 + q$ $3 = a(-1)^2 + 1$ $2 = a$ $g(x) = 2x^2 + 1$	• Calc y = 3 • subs q and (-1; 3) • equation	3
4.5	$y = -x + 1$	• gradient • equation	2
4.6	$-1 \leq x < 0$ if no top boundary zero	• -1 and 0 • inequalities	2
4.7	$\therefore\ x = \pm 3 \quad g(3) = 2(3)^2 + 1$ $= 19$	• ± 3 • answer	2
4.8	$K(x) = -(2x^2 + 1) + 3$ CA from 4.4 $= -2x^2 + 2$	• sub • answer	2

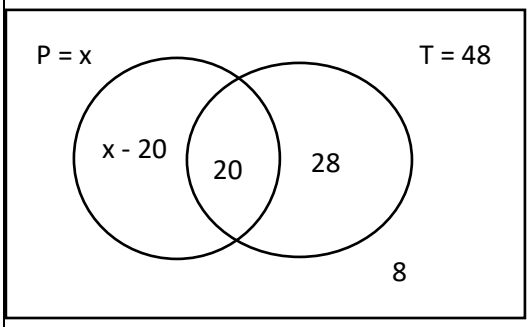
TOTAL: 15

QUESTION 5

5.1	$y=-9$	• ans	1
5.2	$x\text{ int}: \ 0=3^x-9$ $3^2=3^x$ $2=x$ $y\text{ int}: \quad f(0)=1-9$ $y=-8$	• 0 • x • y	3
5.3		• asymptote • both intercepts • shape	3
5.4	$(0;-8) \quad (1;6)$ $y=mx+c$ $-6=m(1)-8$ $2=m$ $y=2x-8$	• sub c = - 8 • m = 2 • equation	3
5.5	$y=-3^x-9$	• same asypt • -3^x	2
5.6	$Need \ \ x\,int \ \therefore \ 0=2x-8$ $8=2x$ $4=x$ $x<4$	• y = 0 • ans	2

TOTAL :14

QUESTION 6

6.1.1	$P(A\ or\ B) = 1 - 0,05$ AO full marks $= 0,95$	• 1 - • ans	2
6.1.2	$P(A\ or\ B) = P(A) + P(B) - P(A\ and\ B)$ $0,95 = 0,25 + 0,89 - P(A\ and\ B)$ $P(A \text{ and } B) = 0,114 - 0,95$ $= 0,19$ $P(A\ and\ B) \neq 0 \ \therefore\ not\ mutually\ exclusive$	• subs in rule • ans • conclusion	3
6.1.3	$P(only\ B) = P(B) - P(A\ and\ B)$ $= 0,89 - 0,19$ $0,7$	• method • ans	2
6.2.1	S = 150  	• 20 • x – 20 • 28 **94 in cricle does not get a mark**	3
6.2.2	$x - 20 + 20 + 28 + 8 = 150$ $x = 150 - 36$ $x = 114$ Only smart phone = $1140 - 20$ $= 94$	• eq • x • ans	3
6.2.3	$P(most\ one) = \frac{8 + 94 + 28}{150}$ $= \frac{130}{150}$ $= \frac{13}{15}$ $OR\ \ \frac{150 - 20}{150}$ $= \frac{13}{15}$	• 130 num CA • 150 den	2

TOTAL: 15