PAST PAPER QUESTIONS GRADE 11 MATHEMATICS

DO THESE QUESTIONS AS PART OF REINFORCING THE CONCEPTS

QUESTION 1

1.1 Solve for x in each of the following:

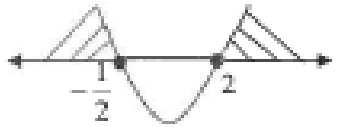
1.1.1 $x(2x+1)=0$ (2)

1.1.2 $5x^2+2x-6=0$ (correct to TWO decimal places) (3)

1.1.3 $2x^2-2 \geq 3x$ (4)

1.1.4 $\sqrt{2x+5}-\dfrac{3}{\sqrt{2x+5}}=-2$ (6)

ANSWERS

1.1.1	$x(2x+1)=0$ $x=0$ *or/of* $x=-\frac{1}{2}$	✓ $x = 0$ ✓ $x=-\frac{1}{2}$ (2)
1.1.2	$5x^2+2x-6=0$ $x=\frac{-b\pm\sqrt{b^2-4ac}}{2a}$ $=\frac{-(2)\pm\sqrt{(2)^2-4(5)(-6)}}{2(5)}$ $=\frac{5\pm\sqrt{124}}{10}$ $x=0,91$ *or/of* $x=-1,31$	✓ substitution into correct formula/ *vervanging in korrekte formule* ✓ answer/*antw.* ✓ answer/*antw.* (3)
1.1.3	$2x^2-2\geq 3x$ $2x^2-3x-2\geq 0$ $(2x+1)(x-2)\geq 0$  $x\leq -\frac{1}{2}$ *or/of* $x\geq 2$	✓ std form/*stand. vorm* ✓ factors or using formula/ *faktore of gebruik formule* ✓✓ $x\leq -\frac{1}{2}$ *or/of* $x\geq 2$ (4)

ANSWERS

1.1.4	$\sqrt{2x+5}-\frac{3}{\sqrt{2x+5}}=-2$ Let $\sqrt{2x+5}=k$ $k-\frac{3}{k}=-2$ $k^2-3=-2k$ $k^2+2k-3=0$ $(k+3)(k-1)=0$ $k=-3$ or/*of* $k=1$	✓changing to quadratic/ *verander na kwadraties* ✓factors or using formula/ *faktore of gebruik formule* ✓$k=3$ or/*of* $k=1$
	$\sqrt{2x+5}=-3$ *no solution* or/*of* $\sqrt{2x+5}=1$ $2x+5=1$ $2x=-4$ $x=-2$	✓no solution/ *geen oplossing* ✓square both sides/ *kwadreer beide kante* ✓ $x=-2$

QUESTION 3

3.1 Given the linear pattern: $7 ; 2 ; -3 ; \ldots$

3.1.1 Determine the general term, T_n, of the linear pattern. (2)

3.1.2 Calculate the value of T_{20}. (2)

3.1.3 Which term in the pattern has a value of -138? (2)

3.2 $6 ; 2x+1$ and $3x-3$ are the first three terms of a linear pattern.

Calculate the value of x. (3)

[9]

ANSWERS

QUESTION/*VRAAG* 3

3.1.1	7 2 -3 -5 -5 $T_n = an + b$ $= -5n + 12$	✓ $-5n$ ✓ 12 (2)
3.1.2	$T_{20} = -5(20) + 12$ $= -88$	✓ substitution/*verv.* ✓ answer/*antw.* (2)
3.1.3	$-5n + 12 = -138$ $-5n = -150$ $n = 30$ 30^{th} term(T_{30})	✓ substitution/*verv.* ✓ answer/*antw.* (2)
3.2	6 $2x+1$ $3x-3$ $2x-5$ $x-4$ $2x - 5 = x - 4$ $x = 1$	✓ $2x-5$ and/*en* $x-4$ ✓ equating/*verg.* ✓ answer/*antw.* (3) [9]

QUESTION 5

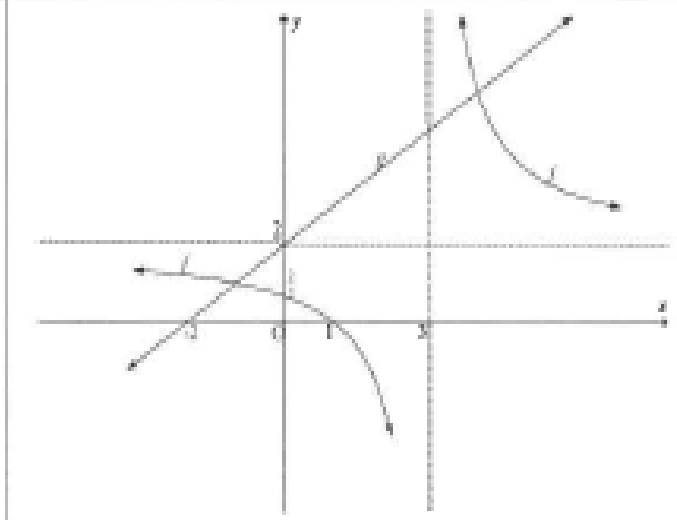
Given: $f(x)=\frac{4}{x-3}+2$ and $g(x)=x+2$

5.1	Write down the equations of the asymptotes of f.	(2)
5.2	Determine the x-intercept of f.	(3)
5.3	Determine the y-intercept of f.	(2)
5.4	Sketch the graphs of f and g on the same system of axes. Show clearly ALL the intercepts with the axes and any asymptotes.	(5)
5.5	Calculate the x-coordinates of the points of intersection of f and g.	(4)

ANSWERS

QUESTION/*VRAAG* 5

5.1	$x=3$ $y=2$	✓$x=3$ ✓$y=2$ (2)
5.2	$0=\frac{4}{x-3}+2$ $-2=\frac{4}{x-3}$ $-2(x-3)=4$ $-2x+6=4$ $x=1$ **OR/OF** $(1;0)$	✓subst./*verv.* $y=0$ ✓simplification/*vereenv.* ✓answer/*antw.* (3) ✓✓✓answer/*antw* (3)
5.3	$y=\frac{4}{0-3}+2$ $=\frac{2}{3}$ **OR/OF** $\left(0;\frac{2}{3}\right)$	✓subst/*verv.* $x=0$ ✓answer/*antw.* (2) ✓✓answer/*antw* (2)

5.4		For/*Vir* f ✓asymptotes/*asimptote* ✓shape/*vorm* ✓x- and y- int. /*afsnit* For/*Vir* g ✓x-int./*afsnit* ✓y-int./*afsnit* (5)

ANSWERS

5.5	$\frac{4}{x-3}+2=x+2$	✓ $\frac{4}{x-3}+2=x+2$
	$\frac{4}{x-3}=x+2-2$	
	$\frac{4}{x-3}=x$	
	$x(x-3)=4$	✓ std vorm/*stand. vorm*
	$x^2-3x-4=0$	✓ factors/*faktore*
	$(x-4)(x+1)=0$	✓ answers/*antw.*
	$x=4$ or $x=-1$	(4)