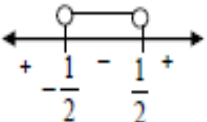


GRADE 12
REVISION OF PAST PAPERS FOR PRACTICE
November 2019 PAST PAPER

ANSWERS

QUESTION 1 OF 2019 FINAL EXAM
QUESTION/PRAAG 1

1.1.1	$x^2 + 5x - 6 = 0$ $(x+6)(x-1) = 0$ $x = -6$ or $x = 1$	✓ factors ✓ $x = -6$ ✓ $x = 1$ (3)
1.1.2	$4x^2 + 3x - 5 = 0$ $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$ $x = \frac{-3 \pm \sqrt{(3)^2 - 4(4)(-5)}}{2(4)}$ $x = \frac{-3 \pm \sqrt{89}}{8}$ $x = -1,55$ or $x = 0,8$	✓ substitution into the correct formula ✓ $x = -1,55$ ✓ $x = 0,8$ (3)
1.1.3	$4x^2 - 1 < 0$ $(2x+1)(2x-1) < 0$ $\frac{-1}{2} < x < \frac{1}{2}$ 	✓ factors ✓ method ✓ answer (3)
1.1.4	$(\sqrt{\sqrt{32} + x})(\sqrt{\sqrt{32} - x}) = x$ $\sqrt{32 - x^2} = x$ $32 - x^2 = x^2$ $-2x^2 = -32$ $x^2 = 16$ $x = \pm 4$ $\therefore x = 4$	✓ $\sqrt{32 - x^2}$ ✓ squaring both sides ✓ $x^2 = 16$ ✓ $x = 4$ (selection) (4)

$$\sqrt{(\sqrt{32} + x)(\sqrt{32} + x)}$$

DIFFERENCE OF TWO SQUARE BY USING DISTRIBUTIVE LAW

$$\sqrt{32 - x^2}$$

1.2	$y + x = 12$ $y = -x + 12 \dots\dots(1)$ $xy = 14 - 3x \dots\dots(2)$ Sub (1) into (2) $x(-x + 12) = 14 - 3x$ $-x^2 + 12x - 14 + 3x = 0$ $-x^2 + 15x - 14 = 0$ $x^2 - 15x + 14 = 0$ $(x - 14)(x - 1) = 0$ $x = 14$ or $x = 1$ $y = -2$ or $y = 11$ OR/OF $y + x = 12$ $x = -y + 12 \dots\dots(1)$ $xy = 14 - 3x \dots\dots(2)$ Sub (1) into (2) $y(-y + 12) = 14 - 3(-y + 12)$ $12y - y^2 - 14 + 36 - 3y = 0$ $-y^2 + 9y + 22 = 0$ $y^2 - 9y - 22 = 0$ $(y + 2)(y - 11) = 0$ $y = -2$ or $y = 11$ $x = 14$ or $x = 1$	✓y subject of the formula ✓ substitution ✓ simplification ✓ both values of x ✓ both values of y (5) OR/OF ✓ x subject of the formula ✓ substitution ✓ simplification ✓ both values of y ✓ both values of x (5)
1.3	3 6 9 12 15 18 21 24 27 30 3 3 3 ² 3 3 3 ² 3 3 3 ² 3 ∴ k = 14	✓ identifying multiples of 3 ✓ ten multiples of 3 ✓ powers of 3 ✓ answer (4)
22		

QUESTION 2 OF 2019 FINAL EXAM

QUESTION/FR44G 2

2.1.1	209 ; 186	✓209 ✓186 (2)
2.1.2	$ \begin{array}{cccc} 321 & ; & 290 & ; & 261 & ; & 234 \\ & \swarrow & & \swarrow & & \swarrow & \\ \text{1st diff} & & -31 & & -29 & & -27 \\ & & \swarrow & & \swarrow & & \\ \text{2nd diff} & & 2 & & 2 & & \\ \\ 2a - 2 & 3a + b = -31 & a + b + c = 321 \\ a - 1 & 3(1) + b = -31 & 1 + (-34) + c = 321 \\ & b = -34 & c = 354 \\ \\ T_n = n^2 - 34n + 354 \end{array} $	✓ 2 nd diff = 2 ✓ a = 1 ✓ b = -34 ✓ c = 354 (4)
2.1.3	$ \begin{aligned} n^2 - 34n + 354 &= 74 \\ n^2 - 34n + 280 &= 0 \\ (n - 14)(n - 20) &= 0 \\ n = 14 \quad \text{or} \quad n = 20 \end{aligned} $	✓equating T_n to 74 ✓standard form ✓14 ✓ 20 (4)
2.1.4	$ \begin{aligned} f'(n) &= 0 \\ 2n - 34 &= 0 \\ 2n &= 34 \\ n &= 17 \\ \\ \text{Term 17 will have the smallest value} \\ \\ \text{OR/OF} \\ n &= \frac{-b}{2a} \\ n &= \frac{34}{2} \\ n &= 17 \\ \\ \text{Term 17 will have the smallest value} \\ \\ \text{OR/OF} \\ n &= \frac{14 + 20}{2} = 17 \\ \\ \text{Term 17 will have the smallest value} \end{aligned} $	✓ $2n - 34 = 0$ ✓ answer (2) OR/OF ✓ substitution ✓ answer (2) OR/OF ✓ substitution ✓ answer (2)

2.2.1	$a = \frac{5}{8} ; r = \frac{1}{2} ; n = 21$ $S_n = \frac{a(1-r^n)}{1-r}$ $S_{21} = \frac{\frac{5}{8} \left(1 - \left(\frac{1}{2} \right)^{21} \right)}{1 - \frac{1}{2}}$ $= 1,2499\dots$ $= 1,25$	<p>✓ r</p> <p>✓ substitution into the correct formula</p> <p>✓ answer (3)</p>
2.2.2	$T_n > \frac{5}{8192}$ $ar^{n-1} > \frac{5}{8192}$ $\frac{5}{8} \left(\frac{1}{2} \right)^{n-1} > \frac{5}{8192}$ $\left(\frac{1}{2} \right)^{n-1} > \frac{1}{1024}$ $\left(\frac{1}{2} \right)^{n-1} > \left(\frac{1}{2} \right)^{10} \quad \text{or} \quad 2^{-n+1} > 2^{-10}$ $\therefore n-1 < 10 \quad \quad \quad -n+1 > -10$ $n < 11 \quad \quad \quad n < 11$ $\therefore n = 10 \quad \quad \quad \therefore n = 10$ <p>OR/OF</p> <p>8 ; 16 ; 32 ; ... ; 8192</p> $8 \cdot 2^{n-1} < 8192$ $2^{n-1} < 1024$ $2^{n-1} < 2^{10}$ $n-1 < 10$ $n < 11$ $\therefore n = 10$	<p>✓ substitution into the correct formula</p> <p>✓ method /same base or log</p> <p>✓ calculating n</p> <p>✓ answer (4)</p> <p>OR/OF</p> <p>✓ substitution into the correct formula</p> <p>✓ method</p> <p>✓ calculating n</p> <p>✓ answer (4)</p>
		[19]