

10.2.3 Determine the size of \hat{R} in terms of x .

10.2.4 Prove that $PS = SR$.

C2

1.1.3 $4x - 2x^2 < 0$

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In the diagram, the vertices A, B and C of $\triangle ABC$ are concyclic. EB and EC are tangents to the circle at B and C respectively. T is a point on AB such that $TE \parallel AC$. BC cuts TE in F.

In die diagram is die hoekpunte A, B en C van $\triangle ABC$ konisokies. EB en EC is raklyne aan die sirkel by B en C onderskeidelik. T is 'n punt op AB sodat dat $TE \parallel AC$. BC kruis TE in F.



Question 11

10.2.4 Bewys dat $PS = SR$.

[15]

Vraag 11

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- 1.2 Solve for x and y simultaneously:
 $3x - y + 2 = 0$ and $y = -x^2 + 2x + 8$

- 1.3 Show that the roots of
 $3x^2 + (k+2)x - 1 - k$ are real and rational for all values of k .

- 1.3 Toon dat die wortels van
 $3x^2 + (k+2)x - 1 - k$ reëel en rasional vir alle waardes van k .

[30]

Question 2

2.1 Simplify fully, WITHOUT using a calculator:

$$2.1.1 \frac{5^{a-2} \cdot 2^{a+2}}{10^a - 10^{a-1} \cdot 2} \quad (4)$$

$$2.1.1 \frac{5^{a-2} \cdot 2^{a+2}}{10^a - 10^{a-1} \cdot 2} \quad (5)$$

$$2.1.2 \frac{\sqrt{27m^6} - \sqrt{48m^6}}{\sqrt{12m^6}} \quad (4)$$

$$2.1.2 \frac{\sqrt{27m^6} - \sqrt{48m^6}}{\sqrt{12m^6}} \quad (3)$$

2.2 WITHOUT using a calculator, show that

$$\frac{2}{1 + \sqrt{2}} - \frac{8}{\sqrt{8}} = -2.$$

$$2.2 \text{ Toon dat } \frac{2}{1 + \sqrt{2}} - \frac{8}{\sqrt{8}} = -2. \quad (4)$$

Vraag 2

2.1 Vereenvoudig volledig, SONDER om 'n sakrekenaar te gebruik:

$$3.3 \frac{5^{a-2} \cdot 2^{a+2}}{10^a - 10^{a-1} \cdot 2} \quad (4)$$

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Vraag 3

3.3 Consider the quadratic pattern:
 $-9; -6; 1; 12; x; \dots$

3.3 Bepaal die kwadratiese patroon:
 $-9; -6; 1; 12; x; \dots$

3.1 Determine the value of x .

3.1 Bepaal die waarde van x .

3.2 Determine a formula for the n^{th} term of the pattern.

3.2 Bepaal 'n formule vir die n^{de} term van die patroon.

Vraag 1

- 1.1 Solve for x in each of the following:
1.1.1 $3x^2 - 5x - 1 = 0$ (leave your answer correct to TWO decimal places)

- 1.1.2 $x^2 - 6x + 8 = 0$

[10]

3.3 A new pattern, P_n , is formed by adding 3 to each term in the given quadratic pattern.

3.3 By elke term in die gegeve kwadratiese patroon te tel. Skryf die algemene term van P_n neer in die vorm

$$P_n = an^2 + bn + c. \quad (3)$$

3.4 Which term of the sequence found in Question 3.3 has a value of 400?

$$3.4 \text{ Watter term van die ry wat in Vraag 3.3 gevind word, het 'n waarde van 400?} \quad (4)$$

[10]

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[15]

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[15]

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(4)

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[10]

1.1.2 $x^2 - 6x + 8 = 0$

Memo: 60 - 62

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Memo: 62 - 64

- 4.1.1 Write down the fourth term.

4.1.2 Determine a formula for the general term of the pattern.

4.1.3 Which term of the pattern will have a value of -70 ?

4.1.4 If this linear pattern forms the first differences of a quadratic pattern, Q_n , determine the first difference between Q_{509} and Q_{510} .

4.2 A quadratic pattern has a constant second difference of 2 and $T_5 = T_{17} = 29$.

4.2.1 Does this pattern have a minimum or maximum value? Justify the answer.

4.2.2 Determine an expression for the r^k term in the form $T_n = ar^2 + br + c$.

Question 5

Given: $f(x) = -2x^2 + x + 6$

5.1 Calculate the coordinates of the turning point of f .

5.2 Determine the y -intercept of f .

5.3 Determine the x -intercepts of f .

5.4 Sketch the graph of f showing clearly all intercepts with the axes and turning point.

5.5 Determine the values of k such that $f(x) = k$ has equal roots.

5.6 If the graph of f is shifted two units to the right and one unit upwards to form h , determine the equation of h in the form $y = a(x + p)^2 + q$.

Vraag

- 4

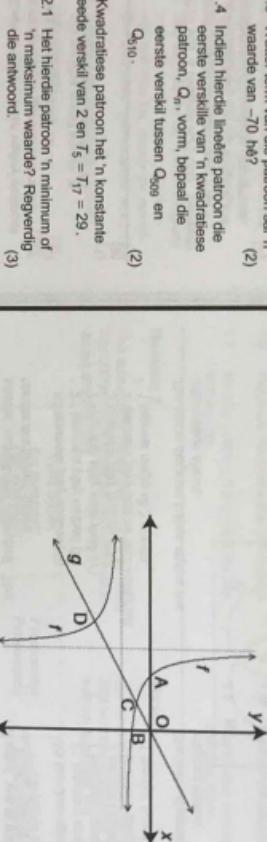
- A quadratic pattern has a constant second difference of 2 and $T_5 = T_{17} = 29$.

- In this model, percentages of the first differences of a quadratic pattern, Q_{ii} , determine the final difference between Q_{509} and

- 4.1.1 Write down the fourth term.

4.1.2 Determine a formula for the general term of the pattern.

4.1.3 Which term of the pattern will have a value of -70 ?



Question 6

- ### Question 6

- YERGEN

- | | |
|--|---|
| <p>4.1.1 Skryf die vierde term neer.</p> <p>4.1.2 Bepaal 'n formule vir die algemene term van die patroon.</p> <p>4.1.3 Watter term van die patroon sal 'n waarde van -70 hê?</p> <p>4.1.4 Indien hierdie lineêre patroon die eerste verskil van 'n Kwadratiese patroon, Q_n, word, bepaal die eerste verskil tussen Q_{n+9} en Q_{n+10}.</p> | <p>(1)</p> <p>(2)</p> <p>(2)</p> <p>(2)</p> |
| <p>4.2</p> <p>'n Kwadratiese patroon het 'n konstante tweede verskil van 2 en $T_5 = T_{17} = 29$.</p> <p>4.2.1 Hét hierdie patroon 'n minimum of 'n maksimum waarde? Regverdig die antwoord.</p> <p>4.2.2 Bepaal 'n uitdrukking vir die n^{ste} term in die vorm $T_n = an^2 + bn + c$</p> | <p>(2)</p> <p>(3)</p> <p>(5)</p> |
| <p>Vraag 5</p> | <p>[15]</p> |
| <p>Gegee: $f(x) = -2x^2 + x + 6$</p> <p>5.1 Bereken die koördinate van die draaispunt van f.</p> <p>5.2 Bepaal die y-afsnit van f.</p> <p>5.3 Bepaal die x-afsnit van f.</p> <p>5.4 Skets die grafiek van f en toon duidelik alle afsnitte met die asse en draaispunt.</p> <p>5.5 Bepaal die waardes van k sodat $f(x) = k$ geslyke wortels het.</p> <p>Indien die grafiek van f twee eenhede na regs en een eenheid na links geskuif word om h te vorm, bepaal die vergelyking van h in die vorm $y = a(x + p)^2 + q$.</p> | <p>(4)</p> <p>(1)</p> <p>(4)</p> <p>(3)</p> <p>(2)</p> <p>(3)</p> |

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- 4.2.1 Kwatause patrouilleer konstante tweede verskil van 2 en $T_5 = T_{17} = 29$.

4. 1. 9 Maak gebruik van die eerste vierde en vijfde patroon om eerste verskil van Q_{avg} te bepaal. Q_1 , worm, bepaal die eerste verskil tussen Q_{avg} en Q_{10} . (2)

- 4.1.1 Skryf die vierde term neer. (1)

4.1.2 Bepaal 'n formule vir die algemene term van die patroon. (2)

4.1.3 Watter term van die patroon sal 'n waarde van -70 he? (2)

Memo: 64 - 66

Memo: 66; 67

9.2.2 What is the probability that one of the learners chosen at random from this group plays netball or volleyball?

51

D1

9.2.2 Wat is die waarskynlikheid dat een van die leerders wat ewekansig uit hierdie groep geskies word, netbal of vlugbal speel? (2)

9.3 The probability that the first answer in a maths quiz competition will be correct is 0,4. If the first answer is correct, the probability of getting the next answer correct rises to 0,5. However, if the first answer is wrong, the probability of getting the next answer correct is only 0,3.

9.3 Die waarskynlikheid dat die eerste antwoord in 'n wiskunde-vasvra wedstryd korrek sal wees, is 0,4. Indien die eerste antwoord korrek is, styg die waarskynlikheid dat die volgende vraag korrek beantwoord sal word tot 0,5. Indien die eerste antwoord egter verkeerd is, is die waarskynlikheid dat die volgende antwoord korrek sal wees slegs 0,3.

9.3.1 Represent the information on a tree diagram. Show the probabilities associated with each branch as well as the possible outcomes.

9.3.2 Calculate the probability of getting the second answer correct.

9.3.1 Stel die inligting op 'n boomdiagram voor. Toon die waarskynlikhede wat met elke tak, asook die moontlike uitkomste, geassosieer word. (3)

9.3.2 Bereken die waarskynlikheid om die tweede vraag korrek te beantwoord.

(3)

[18]

Question 10

Vraag 10

Bongani wants to start a small vegetable garden at his house. He wants to use an existing wall and 14 m of fencing to enclose a rectangular area for the garden. Calculate the dimensions of the largest rectangular area that he can enclose.

Bongani wil 'n klein groentetuintjie by sy huis begin. Hy wil 'n bestaande muur en 'n 14 m-helling gebruik om 'n reghoekige area vir die tuin af te baken. Bereken die afmetings van die grootste reghoekige oppervlakte wat hy kan omhein.

[4]

[150]