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Gr.9

Totaal: 75

Tyd:  $1\frac{1}{2}$  uur

Kwartaal 4, Vraestel 1 2024 – Memorandum

**VRAAG 1**

1.1 Vereenvoudig:

1.1.1  $-2(2x - y)$  (2)

$= -4x + 2y$

1.1.2  $\frac{x}{y}(x - 2y)^2$  (3)

$= \frac{x}{y}(x^2 - 4xy + 4y^2)$

$= \frac{x^3}{y} - 4x^2 + 4xy$

1.2 Faktoriseer elk van die volgende uitdrukkings volledig:

1.2.1  $2m^4n - 36mn^4 - 6mn^2$  (2)

$= 2mn(m^3 - 18n^3 - 3n)$

1.2.2  $p^2 + 4p - 21$  (2)

$= (p + 7)(p - 3)$

1.2.3  $x^2y^6 - 16z^4$  (2)

$= (xy^3 - 4z^2)(xy^3 + 4z^2)$

$$1.2.4 \quad 4m^2(q - 2n) + 16(2n - q) \quad (4)$$

$$= 4m^2(q - 2n) - 16(q - 2n) \checkmark$$

$$= 4(q - 2n) \checkmark (m^2 - 4) \checkmark$$

$$= 4(q - 2n)(m - 2)(m + 2) \checkmark$$

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## VRAAG 2

2.1 Vereenvoudig elk van die volgende algebraïese breuke:

$$2.1.1 \quad \frac{m-n}{4n-4m} \quad (2)$$

$$= \frac{m-n}{-4(m-n) \checkmark}$$

$$= \frac{1}{-4} \checkmark$$

$$2.1.2 \quad \frac{2ab-2b}{a^2b^2-b^2} \div \frac{4ab-4}{ab+b} \quad (5)$$

$$= \frac{2b(a-1) \checkmark}{b^2(a-1)(a+1) \checkmark} \times \frac{b(a+1) \checkmark}{4(ab-1) \checkmark}$$

$$= \frac{1}{2(ab-1)} \checkmark$$

2.2 Los op vir  $x$ :

$$2.2.1 \quad -x + 2(x + 3) = 30 - 5x \quad (3)$$

$$-x + 2x + 6 \checkmark = 30 - 5x$$

$$6x = 24 \checkmark$$

$$x = 4 \checkmark$$

$$2.2.2 \quad \frac{x+1}{2} - \frac{x-1}{5} = \frac{2}{6} \quad (4)$$

$$15(x + 1) - 6(x - 1) = 10$$

$$15x + 15 \checkmark - 6x + 6 \checkmark = 10 \checkmark$$

$$9x = -11$$

$$x = -\frac{11}{9} \checkmark$$

$$2.2.3 \quad 4(3x - 4)(2x + 1) = 0 \quad (2)$$

$$3x - 4 = 0$$

$$x = \frac{4}{3} \checkmark$$

OF

$$2x + 1 = 0$$

$$x = -\frac{1}{2} \checkmark$$

$$2.2.4 \quad x^2 = 3x + 10 \quad (4)$$

$$x^2 - 3x - 10 = 0 \checkmark$$

$$(x - 5)(x + 2) \checkmark = 0$$

$$x = 5 \checkmark \quad \text{OF} \quad x = -2 \checkmark$$

$$2.2.5 \quad 8^{2x+1} = \left(\frac{1}{4}\right)^{-1} \quad (4)$$

$$(2^3)^{2x+1} = (2^{-2})^{-1}$$

$$2^{6x+3} \checkmark = 2^2 \checkmark$$

$$6x + 3 = 2 \checkmark$$

$$6x = -1$$

$$x = -\frac{1}{6} \checkmark$$

2.3 Vereenvoudig sonder die gebruik van 'n sakrekenaar.

$$2.3.1 \quad -(x^2)(-x)^2 \quad (2)$$

$$= -x^2 \times x^2 \checkmark$$

$$= -x^4 \checkmark$$

$$2.3.2 \quad -\frac{1}{x^{-3}} \times x^{-3} \quad (2)$$

$$= -x^3 \checkmark \times x^{-3}$$

$$= -x^0$$

$$= -1 \checkmark$$

$$2.3.3 \quad \frac{2y\sqrt{25x^4-9x^4}}{12x^8y^3} \quad (3)$$

$$= \frac{2y\sqrt{16x^4}}{12x^8y^3}$$

$$= \frac{2y \times 4x^2 \checkmark}{12x^8y^3}$$

$$= \frac{8x^2y \checkmark}{12x^8y^3}$$

$$= \frac{2}{3x^6y^2} \checkmark$$

$$2.3.4 \frac{1}{2x} \text{ van } -(2x)^0 \quad (2)$$

$$= \frac{1}{2x} \times -1 \checkmark$$

$$= -\frac{1}{2x} \checkmark$$

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### VRAAG 3

Gegee:

$x$	1	2	3	4	15	$n$
$y$	-5	-7	-9	-11	$a$	-99

3.1 Skryf die algebraïese reël neer vir die gegewe patroon. (2)

$$T_n = -2n - 3 \checkmark$$

3.2 Bepaal die waardes vir  $a$  en  $n$ . (3)

$$a = -2(15) - 3 = -33 \checkmark$$

$$-99 = -2n - 3 \checkmark$$

$$-96 = -2n$$

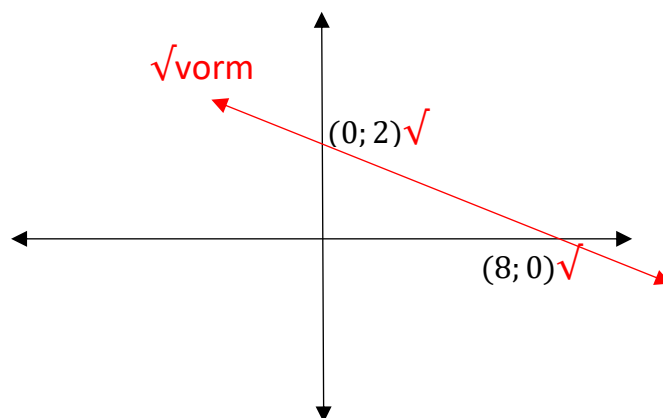
$$48 = n \checkmark$$

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### VRAAG 4

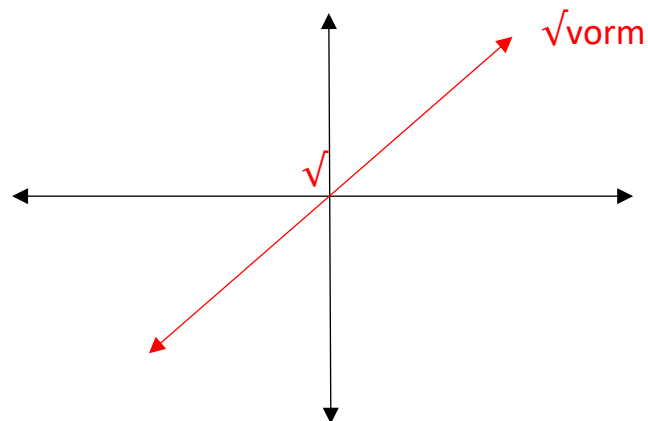
4.1 Teken elkeen van die volgende grafieke op aparte assestelsels en toon duidelik aan waar die grafieke die asse sny.

$$4.1.1 \quad y = -\frac{x}{4} + 2 \quad (3)$$



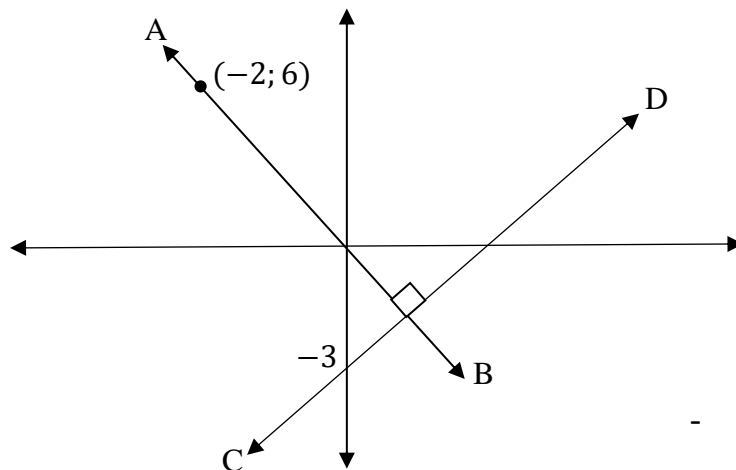
4.1.2  $y = px + q$  waar  $p > 0 ; q = 0$

(2)



4.2 Bepaal die vergelykings van AB en CD in die vorm  $y = mx + c$ .

(3)



$$AB: y = -3x \checkmark$$

$$CD: y = \frac{1}{3}x \checkmark - 3 \checkmark$$

4.3 Bepaal die vergelyking van die lyn wat deur die punt  $(-5; -4)$  en  $(5; 2)$  gaan.

(5)

$$m = \frac{-4-2}{-5-5} \checkmark = \frac{-6}{-10} = \frac{3}{5} \checkmark$$

$$y = \frac{3}{5}x + c$$

$$2 = \frac{3}{5}(5) + c \checkmark$$

$$-1 = c \checkmark$$

$$y = \frac{3}{5}x - 1 \checkmark$$

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**VRAAG 5**

5.1 Verdeel R155 in die verhouding 2:3. (2)

$$155 \times \frac{2}{5} = R62 \checkmark$$

$$155 \times \frac{3}{5} = R93 \checkmark$$

5.2 Vermeerder R175 in die verhouding 7:5. (2)

$$175 \times \frac{7}{5} \checkmark = R245 \checkmark$$

5.3 Bereken hoeveel skape aan 12 sakke voer kan eet as 4 sakke voer genoeg is vir 16 skape. (2)

$$16 \times \frac{12}{4} \checkmark = 48 \text{ skape } \checkmark$$

5.5 Bereken die bedrag rente wat verdien word na 6 jaar, as R25 650 teen 'n saamgestelde rentekoers van 9,5 % p.j. belê word. (3)

$$A = 25\,650 \left(1 + \frac{9,5}{100}\right)^6 \checkmark \text{formule } \checkmark \text{substitusie}$$

$$A = R44\,215,25 \checkmark$$

[9]

**Totaal: [75]**