Vraestel Graad 10 Totaal: 65

Tyd: 1,5 uur

Kwartaal 1 – Toets – Memorandum

Vraag 1

Vereenvoudig, sonder die gebruik van 'n sakrekenaar.
Laat jou antwoord met positiewe eksponente.

1.1 $\dfrac{(-1)^2(-2x^{-0.5}y^0z)^{-2}}{(2^2)^{-2}\left(xy^3z^{\frac{1}{3}}\right)^3}$ (6)

$$= \frac{1\checkmark.(2^2)^2}{\left(xy^3z^{\frac{1}{3}}\right)^3(-2x^{-0.5}y^0z)^2}$$

$$= \frac{16\checkmark}{x^3y^9z\checkmark \times 4x^{-1}z^2\checkmark}$$

$$= \frac{16}{4x^2y^9z^3\checkmark}$$

$$= \frac{4}{x^2y^9z^3}\checkmark$$

1.2 $\dfrac{125^{x-2}\ .\ (\frac{1}{5})^{x+1}}{25^{x-2}}$ (5)

$$= \frac{(5^3)^{x-2}\ .\ (5^{-1})^{x+1}}{(5^2)^{x-2}}$$

$$= \frac{5^{3x-6}\checkmark\ .\ 5^{-x-1}\checkmark}{5^{2x-4}\checkmark}$$

$$= 5^{3x-6-x-1-2x+4}\checkmark$$

$$= \mathbf{5^{-3} = \frac{1}{125}}\checkmark$$

1.3 $\dfrac{\frac{1}{4}(2^{2y})-4^{y+1}}{\sqrt{16^y}}$ (5)

$$= \frac{2^{-2}(2^{2y})-(2^2)^{y+1}}{\sqrt{2^{4y}}}$$

$$= \frac{2^{2y-2}\checkmark - 2^{2y+2}\checkmark}{2^{2y}\checkmark}$$

$$= \frac{2^{2y}(2^{-2} - 2^2)}{2^{2y}} \checkmark$$

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

$$= \frac{-15}{4} \checkmark$$

1.4 $[(x-y)(x-y)]^{\frac{1}{2}}$ (1)

$$= [(x-y)^2]^{\frac{1}{2}}$$

$$= x - y \checkmark$$

1.5 Wat is die helfte van 8^{-2}? (Los jou antwoord in eksponentvorm.) (2)

$$= \frac{8^{-2}}{2}$$

$$= \frac{(2^3)^{-2}}{2}$$

$$= \frac{2^{-6}}{2} \checkmark$$

$$= \frac{1}{2^7} \checkmark$$

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VRAAG 2

Vereenvoudig die volgende algebraïese breuke:

2.1 $\frac{3a-1}{a^2+a-6} + \frac{1}{2-a} - \frac{1}{3+a}$ (4)

$$= \frac{3a-1}{(a+3)(a-2)} - \frac{1}{(a-2)} - \frac{1}{3+a}$$

$$= \frac{3a-1-(a+3)-(a-2)}{(a+3)(a-2)} \checkmark \textbf{\textit{KGV}}$$

$$= \frac{3a-1-a-3 \checkmark -a+2 \checkmark}{(a+3)(a-2)}$$

$$= \frac{a-2}{(a+3)(a-2)}$$

$$= \frac{1}{(a+3)} \checkmark$$

2.2 $\frac{(x-y)^2}{x^2-y^2} \div \frac{1}{y-x} \div \frac{4(x-y)}{2y+2x}$ (4)

$$= \frac{(x-y)^2}{(x-y)(x+y)}\surd \times \frac{y-x}{1} \times \frac{2(y+x)}{4(x-y)}\surd$$

$$= \frac{y-x}{2}\surd \qquad \surd$$

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VRAAG 3

3.1 Los op vir x:

3.1.1 $\frac{2}{3} - \frac{2}{3x} = \frac{2+2x}{6x}$ (3)

$$\frac{4x-4}{6x}\surd = \frac{2+2x}{6x}$$

$$2x = 6\surd$$

$$x = 3\surd$$

3.1.2 $\frac{(\frac{1}{4})^{x-1}}{16} = (\frac{1}{8})^x$ (4)

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

$$2^{-2x-2}\surd = 2^{-3x}$$

$$x = 2\surd$$

3.1.3 $x^{\frac{1}{3}} = 2$ (1)

$$x = 8\surd$$

3.1.4 $3x^2 = 5x + 2$ (4)

$$3x^2 - 5x - 2 = 0\surd \text{ STD=0}$$

$$(3x+1)(x-2) = 0\surd \text{ Faktore}$$

$$3x + 1 = 0 \; of \; x - 2 = 0$$

$$x = -\frac{1}{3}\surd \qquad x = 2\surd$$

3.1.5 $-3 < 1 - \frac{1}{2}x \leq 5$ (3)

$-4 < -\frac{1}{2}x \leq 4$√

$8 > x \geq -8$ √

√

3.1.6 $y = \sqrt{x-1}$ (2)

$y^2 = x - 1$√

$y^2 + 1 = x$√

3.2 Los op vir a en b, indien:

$3^{ab} = 27$ en $2a - 2b = -4$ (8)

$3^{ab} = 3^3$

$ab = 3$√ ***vergelyking (1)***

$2a = 2b - 4$

$a = b - 2$√ ***vergelyking (2)***

Stel (2) in (1)

$b(b-2) = 3$√

$b^2 - 2b - 3 = 0$√

$(b-3)(b+1) = 0$√ √

$b = 3$ *of* $b = -1$

$a = 3 - 2$ $a = -1 - 2$

$a = 1$√ $a = -3$√

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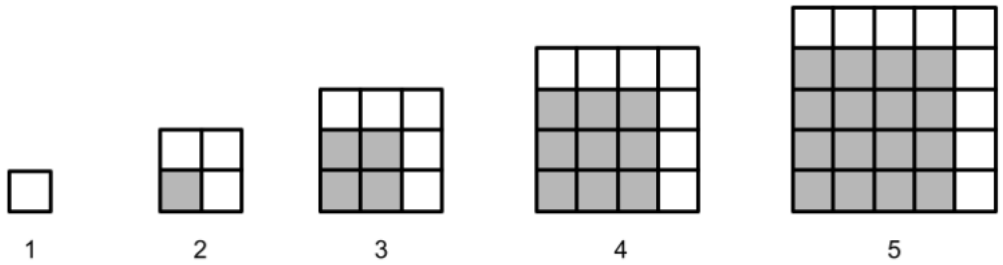
VRAAG 4

4.1 Beskou die volgende getalpatroon en voltooi die onderstaande tabel: (8)



	1	**2**	**3**	**4**	**5**	***n***	**22**
Wit blokkies	1	3	5√	7	9√	$2n-1$√	43√
Grys blokkies	0	1	4	9	16	n^2√$-2n$√$+1$√	441√

4.2 Vir watter waarde van x sal die volgende getalpatroon lineêr wees?
$x;\ 3x-1; 6x-3$;... (2)

$3x-1-x=6x-3-(3x-1)$√

$3x-1-x=6x-3-3x+1$

$1=x$√

4.3 Bepaal die algemene term in die onderstaande getalpatroon:

$1;\frac{7}{8};\frac{17}{27};\ \frac{31}{64};\ \ldots$ (3)

$T_n=\frac{2n^2-1}{n^3}$√√

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Totaal: [65]