Gr.9

Totaal: 80
Tyd: 1 uur

Kwartaal 3, Toets 2023 – Memorandum

Vraag 1

1.1 Vereenvoudig volledig:

1.1.1 $a^2(3a - a^3 - 1)$ (1)

$= 3a^3 - a^5 - a^2$ √

1.1.2 $4a - 2a(a - 1)$ (2)

$= 4a - 2a^2 + 2a$ √
$= -2a^2 + 6a$ √

1.1.3 $-x(2x - 1) + x(-1 + 2x)$ (3)

$= -2x^2 + x$ √ $-x + 2x^2$ √
$= 0$ √

1.1.4 $(x - 3)(x + 4)$ (2)

$= x^2 + 4x - 3x - 12$ √
$= x^2 + x$ √ -12

1.1.5 $(x - 2)^2$ (2)

$= x^2 - 4x$ √ $+4$ √

1.1.6 $-\frac{1}{2}(2b - \frac{a}{2})^2$ (3)

$= -\frac{1}{2}(4b^2 - 2ab$ √ $+ \frac{a^2}{4}$ √ $)$
$= -2b^2 + ab - \frac{a^2}{8}$ √

1.1.7 $(t - 2)(t^2 + 2t + 4)$ (2)

$= t^3$ √ -8 √

1.1.8 $[(x - 1)(x + 1)]^2$ (3)

$= (x^2 - 1)^2$ √
$= x^4 - 2x^2$ √ $+1$ √

1.2 Faktoriseer volledig:

1.2.1 $3ab - 27a^3bc^2 + \sqrt{9a^8b^2c^4}$ (2)

$= 3ab - 27a^3bc^2 + 3a^4bc^2$√
$= 3ab(1 - 9a^2c^2 + a^3c^2)$√

1.2.2 $x^2 - 9$ (2)

$= (x - 3)$√$(x + 3)$√

1.2.3 $b^2(a - c) + (c - a)$ (3)

$= b^2(a - c) - (a - c)$√
$= (a - c)(b^2 - 1)$√
$= (a - c)(b - 1)(b + 1)$ √

1.2.4 $a^2 - 2a - 35$ (2)

$= (a - 7)$√$(a + 5)$√

1.2.5 $-12 - 9x + 3x^2$ (2)

$= 3x^2 - 9x - 12$
$= 3(x^2 - 3x - 4)$ √
$= 3(x - 4)(x + 1)$√

1.2.6 $4abc - 4ac + 2a - 2ab$ (4)

$= 4ac(b - 1)$√$+2a(1 - b)$√
$= 4ac(b - 1) - 2a(b - 1)$√
$= 2a(b - 1)(2c - 1)$√

1.3 Vereenvoudig volledig:

1.3.1 $\frac{3ab-2ab+(ab)^0}{a^2b^2-1}$ (3)

$=\frac{ab+1}{(ab-1)(ab+1)}$√
$=\frac{1}{(ab-1)}$ √

1.3.2 $\frac{-1+b^2}{b^4-b^2} \div \frac{1}{\sqrt{b^4}}$ (4)

$= \frac{b^2-1}{b^2(b^2-1)}$√ $\div \frac{1}{b^2}$√
$= \frac{1}{b^2} \times b^2$√
$= 1$√

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Vraag 2

Los op vir x:

2.1 $2 - x = 1 - 2(x - 3)$ (2)

$2 - x = 1 - 2x + 6\surd$
$x = 5\surd$

2.2 $\frac{-2}{x-1} = \frac{-2}{x+1} - 1$ (5)

$-2x - 2\surd = -2x + 2 - (x - 1)(x + 1)$
$-2x - 2 = -2x + 2 - (x^2 - 1)$
$-2x - 2 = -2x + 2 - x^2 + 1\surd$
$x^2 = 5\surd$
$x = \pm\surd\sqrt{5}\surd$

2.3 $(\frac{1}{4})^x = 16^{x-1}$ (4)

$2^{-2x}\surd = 2^{4x-4}\surd$
$-2x = 4x - 4\surd$
$-6x = -4$
$x = \frac{2}{3}\surd$

2.4 $(\frac{1}{3})^{x^2-4} = 1$ (4)

$(\frac{1}{3})^{x^2-4} = (\frac{1}{3})^0\surd$
$(x - 2)(x + 2)\surd = 0$
$x = 2\ \surd of\ x = -2\surd$

2.5 $\frac{14}{x} = 9 - x$ (5)

$\times x: 14 = 9x - x^2\surd$
$x^2 - 9x + 14 = 0\surd$
$(x - 7)(x - 2) = 0\surd$
$x = 7\ \surd of\ x = 2\surd$

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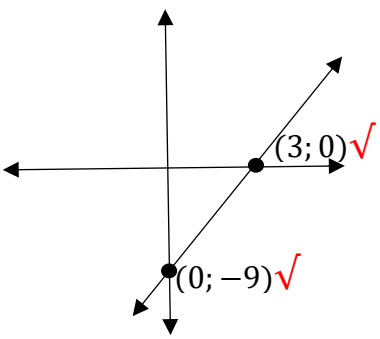
Vraag 3

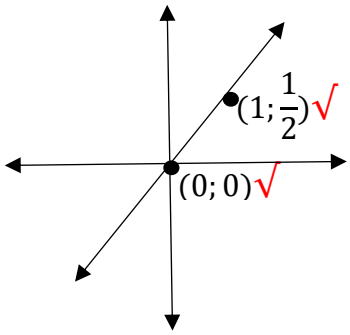
3.1 Skets elkeen van die volgende grafieke op 'n aparte assestelsel. Dui alle afsnitte met die asse duidelik aan:

3.1.1 $-y + 3x = 9$ (2)

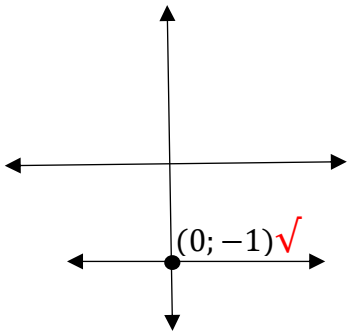
$y = 3x - 9$



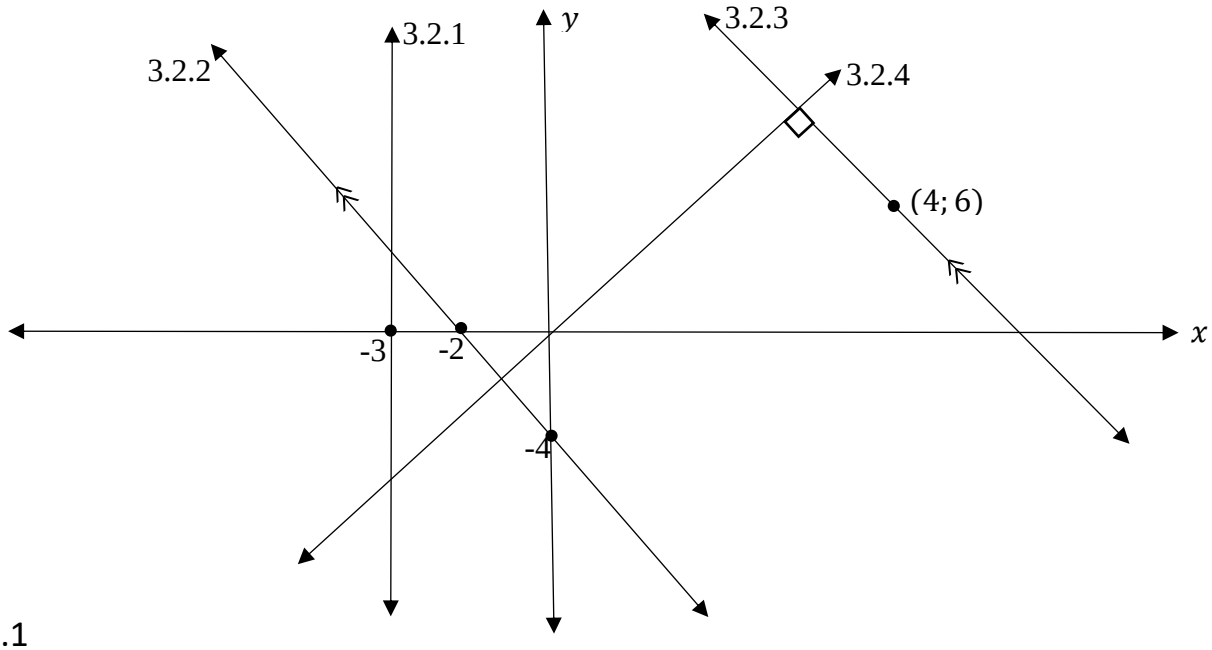
3.1.2 $y = \frac{x}{2}$ (2)



3.1.3 $y = -1$ (1)



3.2 Bepaal die vergelyking van elk van die volgende grafieke:



3.2.1 (1)

$x = -3\sqrt{}$

3.2.2 (2)

$y = mx + c$
$y = -\left(\frac{-4}{-2}\right)x - 4$
$y = -2x\sqrt{} - 4\sqrt{}$

3.2.3 (3)

$y = mx + c$
$y = -2x + c\surd$
Stel in $(4; 6)$
$6 = -2(4) + c\surd$
$14 = c$
$y = -2x + 14\surd$

3.2.4 (1)

$y = mx + c$
$y = \frac{1}{2}x\surd$

3.3 Bepaal die vergelyking van elkeen van die volgende lyne:

3.3.1 'n Lyn ewewydig aan die x-as wat deur die punt $(-1; 1)$ gaan. (1)

$y = mx + c$
$y = 1\surd$

3.3.2 'n Lyn wat parallel is aan die lyn $3y = 6x - 12$ en die y-as sny by -2. (3)

$3y = 6x - 12$
$y = 2x - 4\surd$
$\therefore m = 2$
$y = 2x\surd - 2\surd$

3.3.3 'n Lyn wat deur die punte $(3; 4)$ en $(8; 7)$ gaan. (3)

$m = \frac{7-4}{8-3} = \frac{3}{5}\surd$
$y = \frac{3}{5}x + c$
Stel in $(3; 4)$
$4 = \frac{3}{5}(3) + c\surd$
$4 = \frac{9}{5} + c$
$\frac{11}{5} = c$
$y = \frac{3}{5}x + \frac{11}{5}\surd$

3.3.4 'n Lyn wat loodreg is op die lyn $x = 4$ en deur die punt $(4; 2)$ gaan. (1)

$y = 2\surd$	

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Totaal:[80]