

Jouw
inzet maakt
het verschil!



Toetsanalyse360
Math Generator

Formules herleiden

UITWERKINGEN

= boekje =



Focus



Begrip



Oefenen



Groei

Naam:

Vak:

Klas:

Schooljaar:

Colofon

Titel: Formules herleiden

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Gebruik

Dit materiaal is bedoeld voor educatief gebruik binnen het voortgezet onderwijs.

Opmerking

Hoewel dit document zorgvuldig is samengesteld, kunnen er onbedoelde fouten in voorkomen.

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Niveau 1 – Lineaire formules herleiden

Opgave 1

Gegeven: $p = 6q + 4$

$$p - 4 = 6q$$

$$6q = p - 4$$

$$q = \frac{p-4}{6}$$

Opgave 2

Gegeven: $p = 5q + 2$

$$p - 2 = 5q$$

$$5q = p - 2$$

$$q = \frac{p-2}{5}$$

Opgave 3

Gegeven: $A = -7r + 3$

$$A - 3 = -7r$$

$$-7r = A - 3$$

$$r = -\frac{A-3}{7}$$

Opgave 4

Gegeven: $y = -3x - 7$

$$y + 7 = -3x$$

$$-3x = y + 7$$

$$x = -\frac{y+7}{3}$$

Opgave 5

Gegeven: $C = 6F - 3$

$$C + 3 = 6F$$

$$6F = C + 3$$

$$F = \frac{C+3}{6}$$

Opgave 6

Gegeven: $p = -6q - 6$

$$p + 6 = -6q$$

$$-6q = p + 6$$

$$q = -\frac{p+6}{6}$$

Opgave 7

Gegeven: $A = -6r - 9$

$$A + 9 = -6r$$

$$-6r = A + 9$$

$$r = -\frac{A+9}{6}$$

Opgave 8

Gegeven: $p = -2q + 8$

$$p - 8 = -2q$$

$$-2q = p - 8$$

$$q = -\frac{p-8}{2}$$

Opgave 9

Gegeven: $p = -7q + 8$

$$p - 8 = -7q$$

$$-7q = p - 8$$

$$q = -\frac{p-8}{7}$$

Opgave 10

Gegeven: $v = 4t - 9$

$$v + 9 = 4t$$

$$4t = v + 9$$

$$t = \frac{v+9}{4}$$

Niveau 2 – Breukformules herleiden

Opgave 11

Gegeven: $p = \frac{-3q-7}{-5}$

$$-5p = -3q - 7$$

$$-5p + 7 = -3q$$

$$-3q = -5p + 7$$

$$q = -\frac{-5p+7}{3}$$

Opgave 12

Gegeven: $A = \frac{-4r+8}{4}$

$$4A = -4r + 8$$

$$4A - 8 = -4r$$

$$-4r = 4A - 8$$

$$r = -\frac{4A-8}{4}$$

Opgave 13

Gegeven: $A = \frac{-4r+10}{-5}$

$$-5A = -4r + 10$$

$$-5A - 10 = -4r$$

$$-4r = -5A - 10$$

$$r = -\frac{-5A-10}{4}$$

Opgave 14

Gegeven: $v = \frac{2t-3}{-2}$

$$-2v = 2t - 3$$

$$-2v + 3 = 2t$$

$$2t = -2v + 3$$

$$t = \frac{-2v+3}{2}$$

Opgave 15

Gegeven: $v = \frac{-3t-10}{2}$

$$2v = -3t - 10$$

$$2v + 10 = -3t$$

$$-3t = 2v + 10$$

$$t = -\frac{2v+10}{3}$$

Opgave 16

Gegeven: $C = \frac{5F+4}{3}$

$$3C = 5F + 4$$

$$3C - 4 = 5F$$

$$5F = 3C - 4$$

$$F = \frac{3C-4}{5}$$

Opgave 17

Gegeven: $v = \frac{-5t-5}{-5}$

$$-5v = -5t - 5$$

$$-5v + 5 = -5t$$

$$-5t = -5v + 5$$

$$t = -\frac{-5v+5}{5}$$

Opgave 18

Gegeven: $A = \frac{2r+7}{4}$

$$4A = 2r + 7$$

$$4A - 7 = 2r$$

$$2r = 4A - 7$$

$$r = \frac{4A-7}{2}$$

Opgave 19

Gegeven: $A = \frac{-4r-6}{5}$

$$5A = -4r - 6$$

$$5A + 6 = -4r$$

$$-4r = 5A + 6$$

$$r = -\frac{5A+6}{4}$$

Opgave 20

Gegeven: $p = \frac{6q+4}{-5}$

$$-5p = 6q + 4$$

$$-5p - 4 = 6q$$

$$6q = -5p - 4$$

$$q = \frac{-5p-4}{6}$$

Niveau 3 – Haakjesformules herleiden

Opgave 21

Gegeven: $v = 2(-2t + 5) - 4$

$$v = -4t + 10 - 4$$

$$v = -4t + 6$$

$$v - 6 = -4t$$

$$-4t = v - 6$$

$$t = -\frac{v-6}{4}$$

Opgave 22

Gegeven: $y = 6 + 4(2x - 7)$

$$y = 6 + 8x - 28$$

$$y = 8x - 22$$

$$y + 22 = 8x$$

$$8x = y + 22$$

$$x = \frac{y+22}{8}$$

Opgave 23

Gegeven: $s = 4(-2t + 4) - 4$

$$s = -8t + 16 - 4$$

$$s = -8t + 12$$

$$s - 12 = -8t$$

$$-8t = s - 12$$

$$t = -\frac{s-12}{8}$$

Opgave 24

Gegeven: $C = 3(5F - 9) + 3$

$$C = 15F - 27 + 3$$

$$C = 15F - 24$$

$$C + 24 = 15F$$

$$15F = C + 24$$

$$F = \frac{C+24}{15}$$

Opgave 25

Gegeven: $C = -2(5F - 5) - 9$

$$C = -10F + 10 - 9$$

$$C = -10F + 1$$

$$C - 1 = -10F$$

$$-10F = C - 1$$

$$F = -\frac{C-1}{10}$$

Opgave 26

Gegeven: $C = 3(-2F + 6) + 2$

$$C = -6F + 18 + 2$$

$$C = -6F + 20$$

$$C - 20 = -6F$$

$$-6F = C - 20$$

$$F = -\frac{C-20}{6}$$

Opgave 27

Gegeven: $v = -3(-2t + 3) - 5$

$$v = 6t - 9 - 5$$

$$v = 6t - 14$$

$$v + 14 = 6t$$

$$6t = v + 14$$

$$t = \frac{v+14}{6}$$

Opgave 28

Gegeven: $p = 5(5q - 8) - 9$

$$p = 25q - 40 - 9$$

$$p = 25q - 49$$

$$p + 49 = 25q$$

$$25q = p + 49$$

$$q = \frac{p+49}{25}$$

Opgave 29

Gegeven: $v = 6 + 4(2t - 6)$

$$v = 6 + 8t - 24$$

$$v = 8t - 18$$

$$v + 18 = 8t$$

$$8t = v + 18$$

$$t = \frac{v+18}{8}$$

Opgave 30

Gegeven: $s = 5(-3t + 1) + 5$

$$s = -15t + 5 + 5$$

$$s = -15t + 10$$

$$s - 10 = -15t$$

$$-15t = s - 10$$

$$t = -\frac{s-10}{15}$$

Niveau 4 – Formules met variabele in de noemer

Opgave 31

Gegeven: $p = \frac{7}{5q+5}$

$$p(5q + 5) = 7$$

$$5pq + 5p = 7$$

$$5pq = 7 - 5p$$

$$q = \frac{7-5p}{5p}$$

Opgave 32

Gegeven: $v = \frac{-7t+7}{3t+7}$

$$v(3t + 7) = -7t + 7$$

$$3vt + 7v = -7t + 7$$

$$3vt + 7t = 7 - 7v$$

$$t(3v + 7) = 7 - 7v$$

$$t = \frac{7-7v}{3v+7}$$

Opgave 33

Gegeven: $s = \frac{5}{-5t-6}$

$$s(-5t - 6) = 5$$

$$-5st - 6s = 5$$

$$-5st = 5 + 6s$$

$$t = \frac{5+6s}{-5s}$$

Opgave 34

Gegeven: $v = \frac{-t-2}{-t-4}$

$$v(-t - 4) = -t - 2$$

$$-vt - 4v = -t - 2$$

$$-vt + t = -2 + 4v$$

$$t(-v + 1) = -2 + 4v$$

$$t = \frac{-2+4v}{-v+1}$$

Opgave 35

Gegeven: $s = \frac{-6t-1}{-2t+3}$

$$s(-2t + 3) = -6t - 1$$

$$-2st + 3s = -6t - 1$$

$$-2st + 6t = -1 - 3s$$

$$t(-2s + 6) = -1 - 3s$$

$$t = \frac{-1-3s}{-2s+6}$$

Opgave 36

Gegeven: $p = \frac{7}{3q+5}$

$$p(3q + 5) = 7$$

$$3pq + 5p = 7$$

$$3pq = 7 - 5p$$

$$q = \frac{7-5p}{3p}$$

Opgave 37

Gegeven: $A = \frac{3}{2r+7}$

$$A(2r + 7) = 3$$

$$2Ar + 7A = 3$$

$$2Ar = 3 - 7A$$

$$r = \frac{3-7A}{2A}$$

Opgave 38

Gegeven: $s = \frac{6}{6t-1}$

$$s(6t - 1) = 6$$

$$6st - s = 6$$

$$6st = 6 + s$$

$$t = \frac{6+s}{6s}$$

Opgave 39

Gegeven: $s = \frac{t-7}{-t-7}$

$$s(-t-7) = t-7$$

$$-st - 7s = t - 7$$

$$-st - t = -7 + 7s$$

$$t(-s-1) = -7 + 7s$$

$$t = \frac{-7+7s}{-s-1}$$

Opgave 40

Gegeven: $y = \frac{5x+8}{3x+2}$

$$y(3x+2) = 5x+8$$

$$3yx + 2y = 5x + 8$$

$$3yx - 5x = 8 - 2y$$

$$x(3y-5) = 8-2y$$

$$x = \frac{8-2y}{3y-5}$$

Niveau 5 – Kwadratische formules herleiden

Opgave 41

Gegeven: $v = -5t^2 + 3$

$$v - 3 = -5t^2$$

$$-5t^2 = v - 3$$

$$t^2 = -\frac{v-3}{5}$$

$$t = \sqrt{-\frac{v-3}{5}} \quad \vee \quad t = -\sqrt{-\frac{v-3}{5}}$$

Opgave 42

Gegeven: $s = -5t^2 - 10$

$$s + 10 = -5t^2$$

$$-5t^2 = s + 10$$

$$t^2 = -\frac{s+10}{5}$$

$$t = \sqrt{-\frac{s+10}{5}} \quad \vee \quad t = -\sqrt{-\frac{s+10}{5}}$$

Opgave 43

Gegeven: $A = -5r^2 - 1$

$$A + 1 = -5r^2$$

$$-5r^2 = A + 1$$

$$r^2 = -\frac{A+1}{5}$$

$$r = \sqrt{-\frac{A+1}{5}} \quad \vee \quad r = -\sqrt{-\frac{A+1}{5}}$$

Opgave 44

Gegeven: $v = -6t^2 + 10$

$$v - 10 = -6t^2$$

$$-6t^2 = v - 10$$

$$t^2 = -\frac{v-10}{6}$$

$$t = \sqrt{-\frac{v-10}{6}} \quad \vee \quad t = -\sqrt{-\frac{v-10}{6}}$$

Opgave 45

Gegeven: $p = -4q^2 + 1$

$$p - 1 = -4q^2$$

$$-4q^2 = p - 1$$

$$q^2 = -\frac{p-1}{4}$$

$$q = \sqrt{-\frac{p-1}{4}} \quad \vee \quad q = -\sqrt{-\frac{p-1}{4}}$$

Opgave 46

Gegeven: $y = 6x^2 - 2$

$$y + 2 = 6x^2$$

$$6x^2 = y + 2$$

$$x^2 = \frac{y+2}{6}$$

$$x = \sqrt{\frac{y+2}{6}} \quad \vee \quad x = -\sqrt{\frac{y+2}{6}}$$

Opgave 47

Gegeven: $s = -2t^2 + 7$

$$s - 7 = -2t^2$$

$$-2t^2 = s - 7$$

$$t^2 = -\frac{s-7}{2}$$

$$t = \sqrt{-\frac{s-7}{2}} \quad \vee \quad t = -\sqrt{-\frac{s-7}{2}}$$

Opgave 48

Gegeven: $C = -2F^2 - 5$

$$C + 5 = -2F^2$$

$$-2F^2 = C + 5$$

$$F^2 = -\frac{C+5}{2}$$

$$F = \sqrt{-\frac{C+5}{2}} \quad \vee \quad F = -\sqrt{-\frac{C+5}{2}}$$

Opgave 49

Gegeven: $C = 2F^2 - 9$

$$C + 9 = 2F^2$$

$$2F^2 = C + 9$$

$$F^2 = \frac{C+9}{2}$$

$$F = \sqrt{\frac{C+9}{2}} \quad \vee \quad F = -\sqrt{\frac{C+9}{2}}$$

Opgave 50

Gegeven: $v = 6t^2 + 1$

$$v - 1 = 6t^2$$

$$6t^2 = v - 1$$

$$t^2 = \frac{v-1}{6}$$

$$t = \sqrt{\frac{v-1}{6}} \quad \vee \quad t = -\sqrt{\frac{v-1}{6}}$$

Niveau 6 – Hogere machtsformules herleiden

Opgave 51

Gegeven: $s = -3t^4 - 3$

$$s + 3 = -3t^4$$

$$-3t^4 = s + 3$$

$$t^4 = -\frac{s+3}{3}$$

$$t = \sqrt[4]{-\frac{s+3}{3}} \quad \vee \quad t = -\sqrt[4]{-\frac{s+3}{3}}$$

Opgave 52

Gegeven: $p = -3q^5 + 1$

$$p - 1 = -3q^5$$

$$-3q^5 = p - 1$$

$$q^5 = -\frac{p-1}{3}$$

$$q = \sqrt[5]{-\frac{p-1}{3}}$$

Opgave 53

Gegeven: $v = 5t^3 + 1$

$$v - 1 = 5t^3$$

$$5t^3 = v - 1$$

$$t^3 = \frac{v-1}{5}$$

$$t = \sqrt[3]{\frac{v-1}{5}}$$

Opgave 54

Gegeven: $p = 5q^3 - 6$

$$p + 6 = 5q^3$$

$$5q^3 = p + 6$$

$$q^3 = \frac{p+6}{5}$$

$$q = \sqrt[3]{\frac{p+6}{5}}$$

Opgave 55

Gegeven: $A = -2r^6 - 5$

$$A + 5 = -2r^6$$

$$-2r^6 = A + 5$$

$$r^6 = -\frac{A+5}{2}$$

$$r = \sqrt[6]{-\frac{A+5}{2}} \quad \vee \quad r = -\sqrt[6]{-\frac{A+5}{2}}$$

Opgave 56

Gegeven: $s = -4t^6 - 6$

$$s + 6 = -4t^6$$

$$-4t^6 = s + 6$$

$$t^6 = -\frac{s+6}{4}$$

$$t = \sqrt[6]{-\frac{s+6}{4}} \quad \vee \quad t = -\sqrt[6]{-\frac{s+6}{4}}$$

Opgave 57

Gegeven: $A = 2r^6 - 5$

$$A + 5 = 2r^6$$

$$2r^6 = A + 5$$

$$r^6 = \frac{A+5}{2}$$

$$r = \sqrt[6]{\frac{A+5}{2}} \quad \vee \quad r = -\sqrt[6]{\frac{A+5}{2}}$$

Opgave 58

Gegeven: $v = 2t^3 + 1$

$$v - 1 = 2t^3$$

$$2t^3 = v - 1$$

$$t^3 = \frac{v-1}{2}$$

$$t = \sqrt[3]{\frac{v-1}{2}}$$

Opgave 59

Gegeven: $p = 2q^3 - 9$

$$p + 9 = 2q^3$$

$$2q^3 = p + 9$$

$$q^3 = \frac{p+9}{2}$$

$$q = \sqrt[3]{\frac{p+9}{2}}$$

Opgave 60

Gegeven: $v = -6t^4 + 5$

$$v - 5 = -6t^4$$

$$-6t^4 = v - 5$$

$$t^4 = -\frac{v-5}{6}$$

$$t = \sqrt[4]{-\frac{v-5}{6}} \quad \vee \quad t = -\sqrt[4]{-\frac{v-5}{6}}$$

Niveau 7 – Gebroken machtsformules

Opgave 61

Gegeven: $s = -6t^{\frac{1}{3}} + 4$

$$s - 4 = -6t^{\frac{1}{3}}$$

$$-6t^{\frac{1}{3}} = s - 4$$

$$t^{\frac{1}{3}} = -\frac{s-4}{6}$$

$$t = \left(-\frac{s-4}{6}\right)^3$$

Opgave 62

Gegeven: $s = 4t^{\frac{1}{3}} - 4$

$$s + 4 = 4t^{\frac{1}{3}}$$

$$4t^{\frac{1}{3}} = s + 4$$

$$t^{\frac{1}{3}} = \frac{s+4}{4}$$

$$t = \left(\frac{s+4}{4}\right)^3$$

Opgave 63

Gegeven: $v = 3t^{\frac{1}{2}} + 6$

$$v - 6 = 3t^{\frac{1}{2}}$$

$$3t^{\frac{1}{2}} = v - 6$$

$$t^{\frac{1}{2}} = \frac{v-6}{3}$$

$$t = \left(\frac{v-6}{3}\right)^2$$

Voorwaarde: $\frac{v-6}{3} \geq 0$

Opgave 64

Gegeven: $C = 5F^{\frac{3}{2}} + 8$

$$C - 8 = 5F^{\frac{3}{2}}$$

$$5F^{\frac{3}{2}} = C - 8$$

$$F^{\frac{3}{2}} = \frac{C-8}{5}$$

$$F = \left(\frac{C-8}{5}\right)^{\frac{2}{3}}$$

Voorwaarde: $\frac{C-8}{5} \geq 0$

Opgave 65

Gegeven: $p = 2q^{\frac{1}{2}} + 9$

$$p - 9 = 2q^{\frac{1}{2}}$$

$$2q^{\frac{1}{2}} = p - 9$$

$$q^{\frac{1}{2}} = \frac{p-9}{2}$$

$$q = \left(\frac{p-9}{2}\right)^2$$

Voorwaarde: $\frac{p-9}{2} \geq 0$

Opgave 66

Gegeven: $C = -3F^{\frac{4}{5}} + 4$

$$C - 4 = -3F^{\frac{4}{5}}$$

$$-3F^{\frac{4}{5}} = C - 4$$

$$F^{\frac{4}{5}} = -\frac{C-4}{3}$$

$$F = \left(-\frac{C-4}{3}\right)^{\frac{5}{4}} \quad \vee \quad F = -\left(-\frac{C-4}{3}\right)^{\frac{5}{4}}$$

Opgave 67

Gegeven: $y = -3x^{\frac{1}{3}} + 5$

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

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

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

$$x = \left(-\frac{y-5}{3}\right)^3$$

Opgave 68

Gegeven: $s = 6t^{\frac{4}{5}} + 9$

$$s - 9 = 6t^{\frac{4}{5}}$$

$$6t^{\frac{4}{5}} = s - 9$$

$$t^{\frac{4}{5}} = \frac{s-9}{6}$$

$$t = \left(\frac{s-9}{6}\right)^{\frac{5}{4}} \quad \vee \quad t = -\left(\frac{s-9}{6}\right)^{\frac{5}{4}}$$

Opgave 69

Gegeven: $y = -2x^{\frac{1}{2}} + 6$

$$y - 6 = -2x^{\frac{1}{2}}$$

$$-2x^{\frac{1}{2}} = y - 6$$

$$x^{\frac{1}{2}} = -\frac{y-6}{2}$$

$$x = \left(-\frac{y-6}{2}\right)^2$$

Voorwaarde: $-\frac{y-6}{2} \geq 0$

Opgave 70

Gegeven: $A = -2r^{\frac{1}{2}} - 8$

$$A + 8 = -2r^{\frac{1}{2}}$$

$$-2r^{\frac{1}{2}} = A + 8$$

$$r^{\frac{1}{2}} = -\frac{A+8}{2}$$

$$r = \left(-\frac{A+8}{2}\right)^2$$

Voorwaarde: $-\frac{A+8}{2} \geq 0$

Niveau 8 – Wortelformules herleiden

Opgave 71

Gegeven: $A = 2\sqrt[4]{-4r - 7} - 6$

$$A + 6 = 2\sqrt[4]{-4r - 7}$$

$$\sqrt[4]{-4r - 7} = \frac{A+6}{2}$$

$$-4r - 7 = \left(\frac{A+6}{2}\right)^4$$

$$-4r = \left(\frac{A+6}{2}\right)^4 + 7$$

$$r = -\frac{\left(\frac{A+6}{2}\right)^4 + 7}{4}$$

Voorwaarde: $\frac{A+6}{2} \geq 0$

Opgave 72

Gegeven: $y = 4\sqrt[4]{3x + 6} + 10$

$$y - 10 = 4\sqrt[4]{3x + 6}$$

$$\sqrt[4]{3x + 6} = \frac{y-10}{4}$$

$$3x + 6 = \left(\frac{y-10}{4}\right)^4$$

$$3x = \left(\frac{y-10}{4}\right)^4 - 6$$

$$x = \frac{\left(\frac{y-10}{4}\right)^4 - 6}{3}$$

Voorwaarde: $\frac{y-10}{4} \geq 0$

Opgave 73

Gegeven: $p = 4\sqrt[5]{-3q + 4} - 3$

$$p + 3 = 4\sqrt[5]{-3q + 4}$$

$$\sqrt[5]{-3q + 4} = \frac{p+3}{4}$$

$$-3q + 4 = \left(\frac{p+3}{4}\right)^5$$

$$-3q = \left(\frac{p+3}{4}\right)^5 - 4$$

$$q = -\frac{\left(\frac{p+3}{4}\right)^5 - 4}{3}$$

Opgave 74

Gegeven: $C = -5\sqrt[4]{4F - 8} - 8$

$$C + 8 = -5\sqrt[4]{4F - 8}$$

$$\sqrt[4]{4F - 8} = -\frac{C+8}{5}$$

$$4F - 8 = \left(-\frac{C+8}{5}\right)^4$$

$$4F = \left(-\frac{C+8}{5}\right)^4 + 8$$

$$F = \frac{\left(-\frac{C+8}{5}\right)^4 + 8}{4}$$

Voorwaarde: $-\frac{C+8}{5} \geq 0$

Opgave 75

Gegeven: $v = 3\sqrt[5]{-6t - 3} + 7$

$$v - 7 = 3\sqrt[5]{-6t - 3}$$

$$\sqrt[5]{-6t - 3} = \frac{v-7}{3}$$

$$-6t - 3 = \left(\frac{v-7}{3}\right)^5$$

$$-6t = \left(\frac{v-7}{3}\right)^5 + 3$$

$$t = -\frac{\left(\frac{v-7}{3}\right)^5 + 3}{6}$$

Opgave 76

Gegeven: $C = \sqrt[5]{-3F + 3} - 1$

$$C + 1 = \sqrt[5]{-3F + 3}$$

$$\sqrt[5]{-3F + 3} = \frac{C+1}{1}$$

$$-3F + 3 = \left(\frac{C+1}{1}\right)^5$$

$$-3F = \left(\frac{C+1}{1}\right)^5 - 3$$

$$F = -\frac{\left(\frac{C+1}{1}\right)^5 - 3}{3}$$

Opgave 77

Gegeven: $p = 5\sqrt[3]{2q-7} - 9$

$$p + 9 = 5\sqrt[3]{2q-7}$$

$$\sqrt[3]{2q-7} = \frac{p+9}{5}$$

$$2q - 7 = \left(\frac{p+9}{5}\right)^3$$

$$2q = \left(\frac{p+9}{5}\right)^3 + 7$$

$$q = \frac{\left(\frac{p+9}{5}\right)^3 + 7}{2}$$

Opgave 78

Gegeven: $A = 4\sqrt[4]{3r+3} + 1$

$$A - 1 = 4\sqrt[4]{3r+3}$$

$$\sqrt[4]{3r+3} = \frac{A-1}{4}$$

$$3r + 3 = \left(\frac{A-1}{4}\right)^4$$

$$3r = \left(\frac{A-1}{4}\right)^4 - 3$$

$$r = \frac{\left(\frac{A-1}{4}\right)^4 - 3}{3}$$

Voorwaarde: $\frac{A-1}{4} \geq 0$

Opgave 79

Gegeven: $y = 5\sqrt[3]{2x+1} - 3$

$$y + 3 = 5\sqrt[3]{2x+1}$$

$$\sqrt[3]{2x+1} = \frac{y+3}{5}$$

$$2x + 1 = \left(\frac{y+3}{5}\right)^3$$

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

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

Opgave 80

Gegeven: $p = \sqrt{3q - 7} + 6$

$$p - 6 = \sqrt{3q - 7}$$

$$\sqrt{3q - 7} = \frac{p-6}{1}$$

$$3q - 7 = \left(\frac{p-6}{1}\right)^2$$

$$3q = \left(\frac{p-6}{1}\right)^2 + 7$$

$$q = \frac{\left(\frac{p-6}{1}\right)^2 + 7}{3}$$

Voorwaarde: $\frac{p-6}{1} \geq 0$

Niveau 9 – Exponentiële formules

Opgave 81

Gegeven: $v = 5 \cdot 6^{t-2}$

$$\frac{v}{5} = 6^{t-2}$$

$${}^6\log\left(\frac{v}{5}\right) = t - 2$$

$$t = {}^6\log\left(\frac{v}{5}\right) + 2$$

Opgave 82

Gegeven: $C = 3 \cdot 3^{F+2}$

$$\frac{C}{3} = 3^{F+2}$$

$${}^3\log\left(\frac{C}{3}\right) = F + 2$$

$$F = {}^3\log\left(\frac{C}{3}\right) - 2$$

Opgave 83

Gegeven: $A = 3 \cdot 7^{r+6}$

$$\frac{A}{3} = 7^{r+6}$$

$${}^7\log\left(\frac{A}{3}\right) = r + 6$$

$$r = {}^7\log\left(\frac{A}{3}\right) - 6$$

Opgave 84

Gegeven: $p = 3 \cdot 6^{q+4}$

$$\frac{p}{3} = 6^{q+4}$$

$${}^6\log\left(\frac{p}{3}\right) = q + 4$$

$$q = {}^6\log\left(\frac{p}{3}\right) - 4$$

Opgave 85

Gegeven: $y = 2 \cdot 2^{x-2}$

$$\frac{y}{2} = 2^{x-2}$$

$${}^2\log\left(\frac{y}{2}\right) = x - 2$$

$$x = {}^2\log\left(\frac{y}{2}\right) + 2$$

Opgave 86

Gegeven: $p = 6 \cdot 4^{q-3}$

$$\frac{p}{6} = 4^{q-3}$$

$${}^4\log\left(\frac{p}{6}\right) = q - 3$$

$$q = {}^4\log\left(\frac{p}{6}\right) + 3$$

Opgave 87

Gegeven: $p = 6 \cdot 6^{q+2}$

$$\frac{p}{6} = 6^{q+2}$$

$${}^6\log\left(\frac{p}{6}\right) = q + 2$$

$$q = {}^6\log\left(\frac{p}{6}\right) - 2$$

Opgave 88

Gegeven: $v = 3 \cdot 4^{t+1}$

$$\frac{v}{3} = 4^{t+1}$$

$${}^4\log\left(\frac{v}{3}\right) = t + 1$$

$$t = {}^4\log\left(\frac{v}{3}\right) - 1$$

Opgave 89

Gegeven: $y = 3 \cdot 7^{x-2}$

$$\frac{y}{3} = 7^{x-2}$$

$${}^7\log\left(\frac{y}{3}\right) = x - 2$$

$$x = {}^7\log\left(\frac{y}{3}\right) + 2$$

Opgave 90

Gegeven: $A = 2 \cdot 6^{r+2}$

$$\frac{A}{2} = 6^{r+2}$$

$${}^6\log\left(\frac{A}{2}\right) = r + 2$$

$$r = {}^6\log\left(\frac{A}{2}\right) - 2$$

Niveau 10 – Logaritmische formules

Opgave 91

Gegeven: $s = 2 \cdot {}^2\log(4t - 1) - 4$

$$s + 4 = 2 \cdot {}^2\log(4t - 1)$$

$$\frac{s+4}{2} = {}^2\log(4t - 1)$$

$$2^{\frac{s+4}{2}} = 4t - 1$$

$$4t = 2^{\frac{s+4}{2}} + 1$$

$$t = \frac{2^{\frac{s+4}{2}} + 1}{4}$$

Voorwaarde: $4t - 1 > 0$

$$t > \frac{1}{4}$$

Opgave 92

Gegeven: $v = 2 \cdot {}^5\log(4t + 9) + 5$

$$v - 5 = 2 \cdot {}^5\log(4t + 9)$$

$$\frac{v-5}{2} = {}^5\log(4t + 9)$$

$$5^{\frac{v-5}{2}} = 4t + 9$$

$$4t = 5^{\frac{v-5}{2}} - 9$$

$$t = \frac{5^{\frac{v-5}{2}} - 9}{4}$$

Voorwaarde: $4t + 9 > 0$

$$t > \frac{-9}{4}$$

Opgave 93

Gegeven: $A = 4 \cdot {}^3\log(3r + 6) + 5$

$$A - 5 = 4 \cdot {}^3\log(3r + 6)$$

$$\frac{A-5}{4} = {}^3\log(3r + 6)$$

$$3^{\frac{A-5}{4}} = 3r + 6$$

$$3r = 3^{\frac{A-5}{4}} - 6$$

$$r = \frac{3^{\frac{A-5}{4}} - 6}{3}$$

Voorwaarde: $3r + 6 > 0$

$$r > -2$$

Opgave 94

Gegeven: $y = 4 \cdot {}^4\log(5x - 5) - 6$

$$y + 6 = 4 \cdot {}^4\log(5x - 5)$$

$$\frac{y+6}{4} = {}^4\log(5x - 5)$$

$$4^{\frac{y+6}{4}} = 5x - 5$$

$$5x = 4^{\frac{y+6}{4}} + 5$$

$$x = \frac{4^{\frac{y+6}{4}} + 5}{5}$$

Voorwaarde: $5x - 5 > 0$

$$x > 1$$

Opgave 95

Gegeven: $s = 2 \cdot {}^4\log(2t - 9) + 5$

$$s - 5 = 2 \cdot {}^4\log(2t - 9)$$

$$\frac{s-5}{2} = {}^4\log(2t - 9)$$

$$4^{\frac{s-5}{2}} = 2t - 9$$

$$2t = 4^{\frac{s-5}{2}} + 9$$

$$t = \frac{4^{\frac{s-5}{2}} + 9}{2}$$

Voorwaarde: $2t - 9 > 0$

$$t > \frac{9}{2}$$

Opgave 96

Gegeven: $y = 4 \cdot {}^7\log(4x + 9) + 3$

$$y - 3 = 4 \cdot {}^7\log(4x + 9)$$

$$\frac{y-3}{4} = {}^7\log(4x + 9)$$

$$7^{\frac{y-3}{4}} = 4x + 9$$

$$4x = 7^{\frac{y-3}{4}} - 9$$

$$x = \frac{7^{\frac{y-3}{4}} - 9}{4}$$

Voorwaarde: $4x + 9 > 0$

$$x > \frac{-9}{4}$$

Opgave 97

Gegeven: $v = 4 \cdot {}^3\log(4t + 4) - 2$

$$v + 2 = 4 \cdot {}^3\log(4t + 4)$$

$$\frac{v+2}{4} = {}^3\log(4t + 4)$$

$$3^{\frac{v+2}{4}} = 4t + 4$$

$$4t = 3^{\frac{v+2}{4}} - 4$$

$$t = \frac{3^{\frac{v+2}{4}} - 4}{4}$$

Voorwaarde: $4t + 4 > 0$

$$t > -1$$

Opgave 98

Gegeven: $y = 5 \cdot {}^7\log(2x - 2) - 2$

$$y + 2 = 5 \cdot {}^7\log(2x - 2)$$

$$\frac{y+2}{5} = {}^7\log(2x - 2)$$

$$7^{\frac{y+2}{5}} = 2x - 2$$

$$2x = 7^{\frac{y+2}{5}} + 2$$

$$x = \frac{7^{\frac{y+2}{5}} + 2}{2}$$

Voorwaarde: $2x - 2 > 0$

$$x > 1$$

Opgave 99

Gegeven: $A = 4 \cdot {}^4\log(2r - 5) - 4$

$$A + 4 = 4 \cdot {}^4\log(2r - 5)$$

$$\frac{A+4}{4} = {}^4\log(2r - 5)$$

$$4^{\frac{A+4}{4}} = 2r - 5$$

$$2r = 4^{\frac{A+4}{4}} + 5$$

$$r = \frac{4^{\frac{A+4}{4}} + 5}{2}$$

Voorwaarde: $2r - 5 > 0$

$$r > \frac{5}{2}$$

Opgave 100

Gegeven: $s = 3 \cdot {}^5\log(4t + 7) + 5$

$$s - 5 = 3 \cdot {}^5\log(4t + 7)$$

$$\frac{s-5}{3} = {}^5\log(4t + 7)$$

$$5^{\frac{s-5}{3}} = 4t + 7$$

$$4t = 5^{\frac{s-5}{3}} - 7$$

$$t = \frac{5^{\frac{s-5}{3}} - 7}{4}$$

Voorwaarde: $4t + 7 > 0$

$$t > \frac{-7}{4}$$