2.2 Lineaire formules opstellen

Opgave 20:

a. $\frac{3}{4}$ omhoog dus $rc_l = \frac{3}{4}$

b. $y_B - y_A = 4 - 1 = 3$

c. $rc_l = \dfrac{y_B - y_A}{x_B - x_A} = \dfrac{3}{4}$

Opgave 21:

a. $rc = \dfrac{\Delta y}{\Delta x} = \dfrac{4-1}{1--1} = 1\frac{1}{2}$

$y = 1\frac{1}{2}x + b$ door (1,4)

$4 = 1\frac{1}{2} + b$

$b = 2\frac{1}{2}$

$l: \quad y = 1\frac{1}{2}x + 2\frac{1}{2}$

b. $rc = \dfrac{\Delta y}{\Delta x} = \dfrac{0-5}{2--3} = -1\text{r}$

$y = -x + b$ door (2,0)

$0 = -2 + b$

$b = 2$

$k: \quad y = -x + 2$

c. $rc = \dfrac{\Delta y}{\Delta x} = \dfrac{3-3}{-7-5} = 0$

$y = b$ door (5,3)

$3 = b$

$m: \quad y = 3$

d. $rc = \dfrac{\Delta y}{\Delta x} = \dfrac{250-360}{160-180} = 5\frac{1}{2}$

$y = 5\frac{1}{2}x + b$ door (180,360)

$360 = 990 + b$

$b = -630$

$n: \quad y = 5\frac{1}{2}x - 630$

Opgave 22:

a. $rc = \dfrac{\Delta y}{\Delta x} = \dfrac{4-2}{5-1} = \dfrac{1}{2}$

$y = \frac{1}{2}x + b$ door (1,2)

$2 = \frac{1}{2} + b$

$b = 1\frac{1}{2}$

$k: \quad y = \frac{1}{2}x + 1\frac{1}{2}$

b. $rc = \dfrac{\Delta y}{\Delta x} = \dfrac{40-20}{90-50} = \dfrac{1}{2}$

$y = \frac{1}{2}x + b$ door (50,20)

$20 = 25 + b$

$b = -5$

$l: \quad y = \frac{1}{2}x - 5$

c. $rc = \frac{\Delta y}{\Delta x} = \frac{450 - 350}{5 - 1} = 25$

$y = 25x + b$ door $(1,350)$

$350 = 25 + b$

$b = 325$

$m: \quad y = 25x + 325$

Opgave 23:

a. $rc = \frac{\Delta y}{\Delta x} = \frac{-9 - -5}{7 - -3} = -0,4$

$y = -0,4x + b$ door $(7,-9)$

$-9 = -2,8 + b$

$b = -6,2$

$l: \quad y = -0,4x - 6,2$

b. $rc = \frac{\Delta y}{\Delta x} = \frac{155 - -125}{17 - -23} = 7$

$y = 7x + b$ door $(17,155)$

$155 = 119 + b$

$b = 36$

$m: \quad y = 7x + 36$

c. $rc_{EF} = \frac{\Delta y}{\Delta x} = \frac{-30 - -27}{12 - 18} = 0,5$

$y = 0,5x + b$ door $(0,0)$

$0 = b$

$p: \quad y = 0,5x$

d. $rc_{OH} = \frac{\Delta y}{\Delta x} = \frac{4 - 0}{-12 - 0} = -\frac{1}{3}$

$y = -\frac{1}{3}x + b$ door $(-8,14)$

$14 = \frac{8}{3} + b$

$b = 11\frac{1}{3}$

$q: \quad y = -\frac{1}{3}x + 11\frac{1}{3}$

Opgave 24:

a. $rc = \frac{\Delta R}{\Delta q} = \frac{350 - 270}{500 - 350} = 0,3$

b. € 0,30

c. $R = 0,3q + b$ door $(500,315)$

$315 = 150 + b$

$b = 165$ dus € 165,-

Opgave 25:

a. $rc = \frac{\Delta A}{\Delta s} = \frac{750 - 300}{21 - 15} = 75$

$A = 75s + b$ door (15,300)
$300 = 1125 + b$
$b = -825$
$A = 75s - 825$

b. $rc = \frac{\Delta R}{\Delta t} = \frac{35-10}{60-35} = 1$
$R = t + b$ door (35,10)
$10 = 35 + b$
$b = -25$
$R = t - 25$

Opgave 26:

a. $rc = \frac{\Delta p}{\Delta q} = \frac{2{,}25-7{,}75}{425-150} = -0{,}02$
$p = -0{,}02q + b$ door $(150; 7{,}75)$
$7{,}75 = -3 + b$
$b = 10{,}75$
$p = -0{,}02q + 10{,}75$

b. $p = -0{,}02q + 10{,}75$
$0{,}02q = -p + 10{,}75$
$q = -50p + 537{,}5$

c. $p = -0{,}02 \cdot 250 + 10{,}75 = 5{,}75$

d. $q = 50 \cdot 4{,}25 + 527{,}5 = 325$

Opgave 27:

a. $q = a \cdot p + b$
$rc = \frac{\Delta q}{\Delta p} = \frac{315-380}{145-120} = -2{,}6$
$q = -2{,}6p + b$ door (120,380)
$380 = -312 + b$
$692 = b$
$q = -2{,}6p + 692$

b. $q = -2{,}6 \cdot 180 + 692 = 224$

c. $-2{,}6q + 692 < 445$
$-2{,}6q < -247$
$p > 95$ dus boven de € 95,-

Opgave 28:

a. $k = a \cdot V + b$
$rc = \frac{\Delta k}{\Delta V} = \frac{49{,}6-56}{650-250} = -0{,}016$
$k = -0{,}016V + b$ door (250,56)
$56 = -4 + b$
$60 = b$
$k = -0{,}016V + 60$

b. $-0{,}016V + 60 = 5$
$-0{,}016V = -55$
$V = 3437{,}5$

Opgave 29:

a. $L_m = a \cdot t + b$
$rc = \frac{\Delta L}{\Delta t} = \frac{185-173}{100-40} = 0{,}2$
$L_m = 0{,}2t + b$ door $(40{,}173)$
$173 = 8 + b$
$165 = b$
$L_m = 0{,}2t + 165$

b. $L_v = 0{,}2t + 152$

c. $L_v = 0{,}2 \cdot 150 + 152 = 182$ cm

d. $L = a \cdot l + b$
$rc = \frac{\Delta L}{\Delta l} = \frac{-8}{60} = -0{,}133$
$L = -0{,}133l + b$ door $(20{,}176)$
$176 = -2{,}667 + b$
$178{,}667 = b$
$L = -0{,}133l + 178{,}667$

Opgave 30:

a. $B = a \cdot w + b$
$rc = \frac{\Delta B}{\Delta w} = \frac{145{,}89-120{,}13}{112-89} = 1{,}12$
$B = 1{,}12w + b$ door $(112;145{,}89)$
$145{,}89 = 125{,}44 + b$
$20{,}45 = b$
$B = 1{,}12w + 20{,}45$

b. vastrecht € 20,45
prijs per m³ water € 1,12

c. $B = 1{,}12 \cdot 97 + 20{,}45 = 129{,}09$

d. $1{,}12w + 20{,}45 = 161{,}57$
$1{,}12w = 141{,}12$
$w = 126$ dus 126 m³

Opgave 31:

a. $h = a \cdot t + b$
$rc = \frac{\Delta h}{\Delta t} = \frac{235-245{,}6}{4} = -2{,}65$
$h = -2{,}65t + b$ door $(11;245{,}6)$
$245{,}6 = -29{,}15 + b$
$274{,}75 = b$
$h = -2{,}65t + 274{,}75$

b. $h = -2{,}65 \cdot 6 + 274{,}75 = 258{,}85$ km

c. $t = 9{,}25$

$h = -2{,}65 \cdot 9{,}25 + 274{,}75 = 250{,}2$ km

d. $-2{,}65t + 274{,}75 = 220$

$-2{,}65t = -54{,}75$

$t = 20{,}66$ dus 22 maart