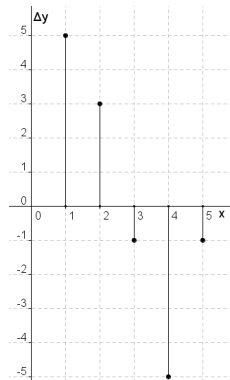
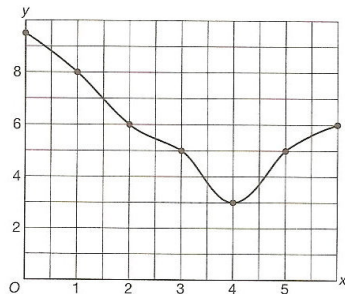


7.6 Diagnostische toets

Opgave 1:



Opgave 2:



Opgave 3:

- a. op $[0,2]$: $\frac{\Delta y}{\Delta x} = \frac{9-1}{2-0} = 4$
op $[2,5]$: $\frac{\Delta y}{\Delta x} = \frac{2-9}{5-2} = -2\frac{1}{3}$
- b. op $[1,3]$: $\frac{\Delta y}{\Delta x} = \frac{8-6}{3-1} = 1$
op $[2,4]$: $\frac{\Delta y}{\Delta x} = \frac{3-9}{4-2} = -3$

Opgave 4:

- a. $\frac{\Delta s}{\Delta t} = \frac{30-7}{30-10} = 1,15 \text{ km/min} = 69 \text{ km/uur}$
- b. teken de lijn door de punten met $t = 0$ en $t = 7,5$; deze lijn snijdt de grafiek ook in het punt met $t = 17,5$.

Opgave 5:

- a. $\frac{\Delta y}{\Delta x} = \frac{f(4) - f(1)}{4 - 1} = \frac{8 - (-2,5)}{3} = 3,5$
- b. $\frac{f(1) - f(-1)}{1 - (-1)} = \frac{-2,5 - 0,5}{2} = -1,5$

$$c. \quad rc_{AB} = \frac{\Delta y}{\Delta x} = \frac{f(3) - f(-2)}{3 - (-2)} = \frac{-1,5 - (-4)}{5} = 0,5$$

Opgave 6:

a. $W'(q) = -0,03q^2 + 3q + 30$

$W'(80) = 78$ euro per stuk

b. $W'(80) = 78$

$W'(100) = 30$

$\frac{30 - 78}{78} \cdot 100\% = -61,5\%$ dus een afname van 61,5%

Opgave 7:

$y_1 = \sqrt{2x - 3}$

a. $\left[\frac{dy}{dx} \right]_{x=2} = 1$

b. $\left[\frac{dy}{dx} \right]_{x=3,5} = 0,5$

c. $y_B = f(6) = 3$

$rc_k = \left[\frac{dy}{dx} \right]_{x=6} = \frac{1}{3}$

$y = \frac{1}{3}x + b$ door (6,3)

$3 = 2 + b$

$1 = b$

$k: y = \frac{1}{3}x + 1$

d. $rc_l = \left[\frac{dy}{dx} \right]_{x=4\frac{5}{8}} = 0,4$

$y = 0,4x + b$ door $(4\frac{5}{8}, 2\frac{1}{2})$

$2,5 = 1,85 + b$

$0,65 = b$

$l: y = 0,4x + 0,65$

Opgave 8:

$y_1 = -0,014x^3 + 0,44x^2 - 2,6x + 11$

a. $\left[\frac{dy}{dx} \right]_{x=15,5} = 0,95 > 0$

b. $\left[\frac{dy}{dx} \right]_{x=18,75} = -0,87 < 0$

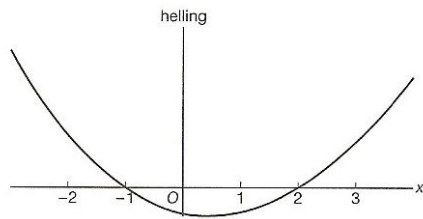
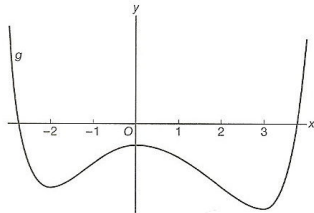
c. de optie maximum geeft $x = 17,39$ en $y = 25,2$

dus $T_{\max} = 25,2$ om 17.24 uur

d. $y_2 = 20$

intersect geeft $x = 12,55 \vee x = 21,28$

dus $\Delta x = 21,28 - 12,55 = 8,73$ dus 8 uur en 44 minuten

Opgave 9:**Opgave 10:****Opgave 11:**

- $f'(x) = 1,8x^2 - 2,6x$
- $g'(p) = 12p^2 + 2p - 11$
- $h(q) = 3q - 2(q^2 - 4q) = 3q - 2q^2 + 8q = -2q^2 + 11q$
 $h'(q) = -4q + 11$
- $h'(x) = 2ax + b$

Opgave 12:

- $f(x) = (3-x)(5+2x) = -2x^2 + x + 15$
 $f'(x) = -4x + 1$
- $g(x) = (3x+1)^2 = 9x^2 + 6x + 1$
 $g'(x) = 18x + 6$
- $h(x) = x(2x-1)^2 = x(4x^2 - 4x + 1) = 4x^3 - 4x^2 + x$
 $h'(x) = 12x^2 - 8x + 1$
- $k(x) = \frac{1}{3}x^3 + 2x^2(x-4) + 6 = \frac{1}{3}x^3 + 2x^3 - 8x^2 + 6 = 2\frac{1}{3}x^3 - 8x^2 + 6$
 $k'(x) = 7x^2 - 16x$

Opgave 13:

- $y_A = f(5) = -3$
 $f'(x) = 0,6x^2 - 6$
 $rc_m = f'(5) = 9$
 $y = 9x + b$ door $(5, -3)$
 $-3 = 45 + b$
 $-48 = b$
 $m: y = 9x - 48$
- $y_B = f(0) = 2$
 $rc_k = f'(0) = -6$
 $y = -6x + b$ door $(0, 2)$
 $2 = 0 + b$

$$2 = b$$

$$k: y = -6x + 2$$

Opgave 14:

- a. $\frac{dH}{dt} = 24t^2$
- b. $\frac{dH}{da} = 2a - 5$

Opgave 15:

$$W'(q) = -3q^2 + 120q + 1500 = 0$$

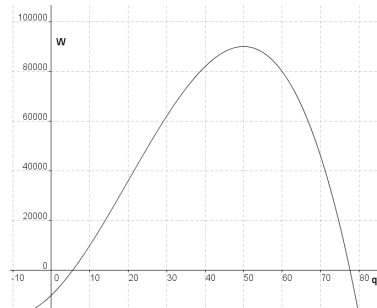
$$q^2 - 40q - 500 = 0$$

$$(q - 50)(q + 10) = 0$$

$$q = 50 \quad \vee \quad q = -10 \text{ (vervalt)}$$

De productie is maximaal voor $q = 50$

dan geldt $W_{\max} = 90000$ euro



Opgave 16:

a. $Z'(t) = -0,0009t^2 + 0,1206t - 2,808$

$$Z'(14) = -1,296 < 0$$

$$Z'(45) = 0,7965 > 0$$

b. 13 november is $t = 104$

$$Z'(104) = 0$$

