

## Diagnostische toets Hoofdstuk 2.

### Opgave 1:

- a.  $y = 2x + b$  door  $(-1,6)$   
 $6 = -2 + b$   
 $b = 8$   
 $k: y = 2x + 8$
- b.  $rc = rc_m = -\frac{1}{2}$   
 $y = -\frac{1}{2}x + b$  door  $(9,3)$   
 $3 = -4\frac{1}{2} + b$   
 $b = 7\frac{1}{2}$   
 $l: y = -\frac{1}{2}x + 7\frac{1}{2}$
- c.  $0 = -10a + 5$   
 $10a = 5$   
 $a = \frac{1}{2}$

### Opgave 2:

- a.  $rc = \frac{\Delta y}{\Delta x} = \frac{-2 - 2}{3 - -5} = -\frac{1}{2}$   
 $y = -\frac{1}{2}x + b$  door  $(-5,2)$   
 $2 = 2\frac{1}{2} + b$   
 $b = -\frac{1}{2}$   
 $k: y = -\frac{1}{2}x - \frac{1}{2}$
- b.  $rc = \frac{\Delta y}{\Delta x} = \frac{135 - 60}{65 - 40} = 3$   
 $y = 3x + b$  door  $(40,60)$   
 $60 = 120 + b$   
 $b = -60$   
 $l: y = 3x - 60$

### Opgave 3:

- a.  $rc = \frac{\Delta W}{\Delta t} = \frac{2900 - 500}{12 - 4} = 300$   
 $W = 300t + b$  door  $(4,500)$   
 $500 = 1200 + b$   
 $b = -700$   
 $W = 300t - 700$
- b.  $W = 5,2 \cdot 300 - 700 = 860$

### Opgave 4:

- a.  $rc = \frac{\Delta A}{\Delta p} = \frac{665 - 800}{9,75 - 7,50} = -60$   
 $A = -60p + b$  door  $(7,5;800)$   
 $800 = -450 + b$   
 $b = 1250$

$$A = -60p + 1250$$

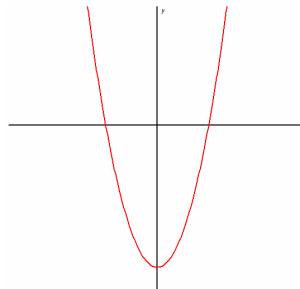
- b.  $A = -60 \cdot 11,25 + 1250 = 575$   
 c.  $-60p + 1250 > 1000$   
 $-60p > -250$   
 $p < 4,17$

### Opgave 5:

- a.  $y_1 = 0,5x^3 - 6x^2 + 30$   
 calc-menu optie maximum geeft  $x = 0 \wedge y = 30$   
 calc-menu optie minimum geeft  $x = 8 \wedge y = -98$   
 dus  $\max f(0) = 30$  en  $\min f(8) = -98$
- b. kleinste waarde:  $f(-4) = -98$   
 grootste waarde:  $f(0) = 30$   
 dus  $B_f = [-98, 30]$
- c. kleinste waarde:  $f(8) = -98$   
 grootste waarde:  $f(13) = 114,5$   
 dus  $B_f = [-98; 114,5]$

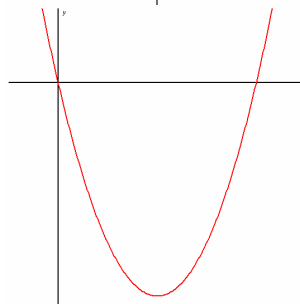
### Opgave 6:

- a.  $D = p^2 - 12 = 0$   
 $p^2 = 12$   
 $p = \sqrt{12} \vee p = -\sqrt{12}$
- b.  $D = p^2 - 12 > 0$   
 $p < -\sqrt{12} \vee p > \sqrt{12}$



### Opgave 7:

- a.  $D = p^2 - 24p < 0$   
 $p(p - 24) = 0$   
 $p = 0 \vee p = 24$   
 $0 < p < 24$
- b.  $p^2 + p^2 + 6p = -4$   
 $2p^2 + 6p + 4 = 0$   
 $p^2 + 3p + 2 = 0$   
 $(p + 1)(p + 2) = 0$   
 $p = -1 \vee p = -2$
- c.  $x_{top} = -\frac{p}{2} = -\frac{1}{2}p$   
 $y_{top} = (-\frac{1}{2}p)^2 + p \cdot -\frac{1}{2}p + 6p = \frac{1}{4}p^2 - \frac{1}{2}p^2 + 6p = -\frac{1}{4}p^2 + 6p = -13$   
 $-\frac{1}{4}p^2 + 6p + 13 = 0$   
 $p^2 - 24p - 52 = 0$   
 $(p + 2)(p - 26) = 0$   
 $p = -2 \vee p = 26$

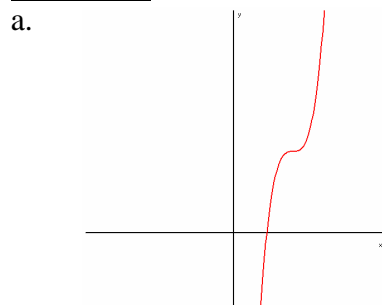


$$\begin{aligned}
 \text{d. } & -\frac{1}{4}p^2 + 6p = 2 \cdot -\frac{1}{2}p + 13 \\
 & -\frac{1}{4}p^2 + 7p - 13 = 0 \\
 & p^2 - 28p + 52 = 0 \\
 & (p + 2)(p - 26) = 0 \\
 & p = 2 \quad \vee \quad p = 26
 \end{aligned}$$

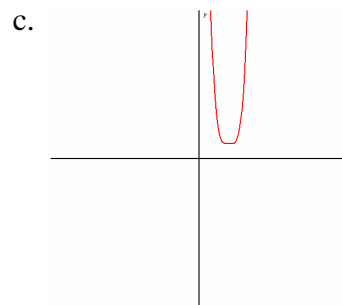
**Opgave 8:**

$$\begin{aligned}
 \text{a. } & x_{top} = -\frac{2p}{2} = -p \text{ dus } p = -x_{top} \\
 & y_{top} = (-p)^2 + 2p \cdot -p + p = p^2 - 2p^2 + p = -p^2 + p \\
 & y_{top} = -(-x_{top})^2 + -x_{top} = -(x_{top})^2 - x_{top} \\
 & \text{dus alle toppen liggen op de kromme } y = -x^2 - x
 \end{aligned}$$

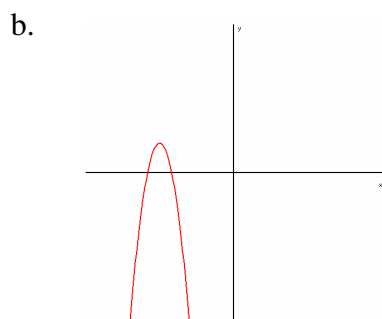
**Opgave 9:**



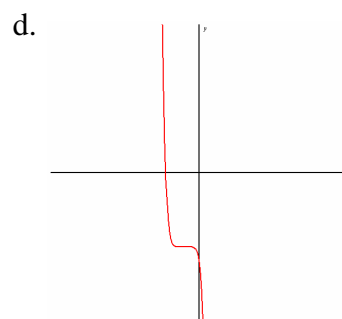
punt van symmetrie (4,1)



top (2,1)



top (-5,2)



punt van symmetrie (-1,-5)

**Opgave 10:**

$$g(x) = 2(x-3)^2 + 5 \quad B_g = [5, \rightarrow) \quad \min g(3) = 5$$

**Opgave 11:**

$$\text{a. top (2,2)} \xrightarrow{V_{x-as,3}} \text{top (2,6)} \xrightarrow{T(3,-4)} \text{top (5,2)}$$

$$\text{b. top (2,2)} \xrightarrow{T(3,-4)} \text{top (5,-2)} \xrightarrow{V_{x-as,3}} \text{top (5,-6)}$$

### Opgave 12:

a. translatie over (7,5)

b.



beginpunt (7,5)

c.  $D_f = [7, \rightarrow)$   $B_f = [5, \rightarrow)$

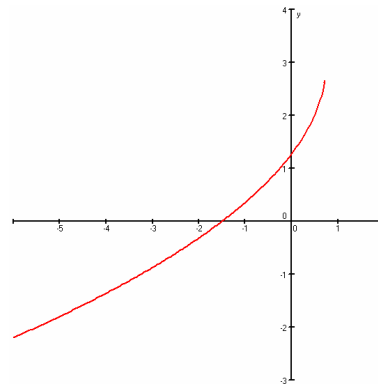
### Opgave 13:

a.  $3 - 4x \geq 0$

$$-4x \geq -3$$

$$x \leq -\frac{3}{4}$$

x	$-3\frac{1}{4}$	$-1\frac{1}{2}$	$-\frac{1}{4}$	$\frac{1}{2}$	$\frac{3}{4}$
y	-1	0	1	2	3



b.  $B_f = \langle \leftarrow, 3 \rangle$

c.  $3 - \sqrt{3 - 4x} = 1$

$$-\sqrt{3 - 4x} = -2$$

$$3 - 4x = 4$$

$$-4x = 1$$

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

$$x < -\frac{1}{4}$$

d.  $3 - \sqrt{3 - 4x} = 1,$

$$-\sqrt{3 - 4x} = -1\frac{1}{2}$$

$$3 - 4x = 2\frac{1}{4}$$

$$-4x = -\frac{3}{4}$$

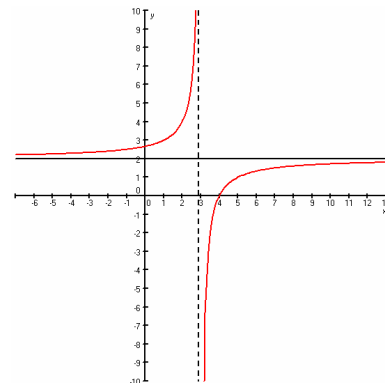
$$x = \frac{3}{16}$$

$$\frac{3}{16} < x \leq \frac{3}{4}$$

### Opgave 14:

a. eerst vermenigvuldiging ten opzichte van de x-as met factor  $-2$  en daarna translatie over (3,2).

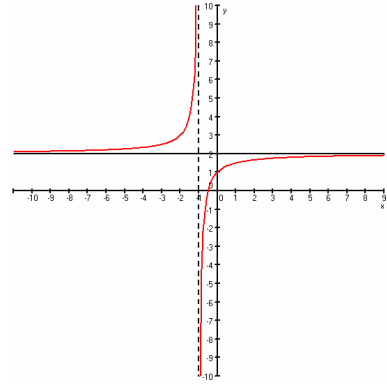
b. *noemer* = 0 geeft  $x = 3$  dus V.A.:  $x = 3$   
voor grote  $x$  is  $f(x) \approx 0 + 2 = 2$  dus H.A.:  $y = 2$



**Opgave 15:**

a. *noemer* = 0 geeft  $x = -1$  dus V.A.:  $x = -1$

voor grote  $x$  is  $f(x) \approx \frac{2x}{x} = 2$  dus H.A.:  $y = 2$



b. 
$$\frac{2x+1}{x+1} = -\frac{1}{2}x + 2$$

$$2x+1 = (x+1)\left(-\frac{1}{2}x + 2\right)$$

$$2x+1 = -\frac{1}{2}x^2 + 2x - \frac{1}{2}x + 2$$

$$\frac{1}{2}x^2 + \frac{1}{2}x - 1 = 0$$

$$x^2 + x - 2 = 0$$

$$(x+2)(x-1) = 0$$

$$x = -2 \quad \vee \quad x = 1$$

$$-2 \leq x < -1 \quad \vee \quad x \geq 1$$

