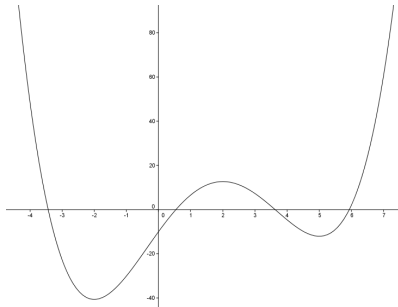


1.5 Wiskundige modellen

Opgave 46:

a.



- b. $f(-2) = -40,67$
 $f(2) = 12,67$
 $f(5) = -12,08$

Opgave 47:

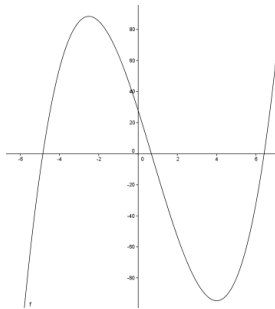
- a. $\min f(-3) = -4$
 $\max f(3) = 6$
- b. $\max g(-1) = 6$
 $\min g(2) = -3$

Opgave 48:

- $\max h(-4) = 7$ $\min k(-2) = 1$
 $\min h(-1) = 2$ $\max k(0) = 5$
 $\max h(2) = 5$ $\min k(3) = -2$

Opgave 49:

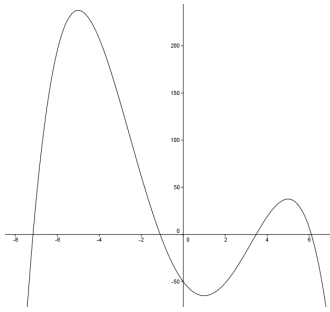
a.



- b. $\max f(-2,5) = 88,42$
 $\min f(4) = -94,67$

Opgave 50:

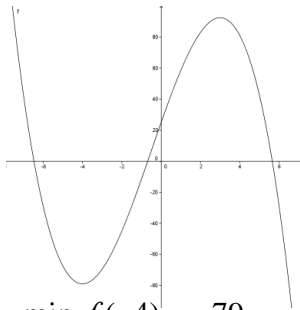
a.



- b. $\max g(-5) = 237,5$
 $\min g(1) = -64,9$
 $\max g(5) = 37,5$

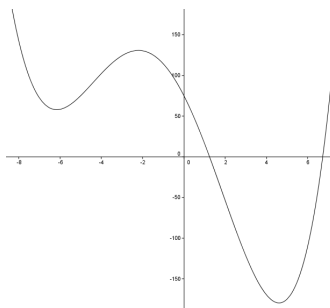
Opgave 51:

a.



$\min f(-4) = -79$
 $\max f(3) = 92,5$

b.



$\min g(-6,16) = 57,77$
 $\max g(-2,20) = 130,64$
 $\min g(4,61) = -179,72$

Opgave 52:

- a. $y_1 = -0,005x^2 + 0,4x$
de optie maximum geeft $x = 40$ en $y = 8$
dus de bal komt maximaal 8 m hoog
- b. de optie zero geeft $x = 80$ dus na 80 m
- c. nee, er zullen afwijkingen optreden door wrijvingen en door de wind

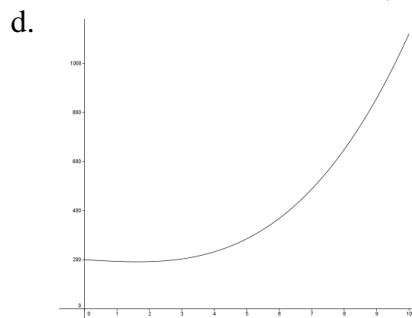
Opgave 53:

- a. 12.50 uur is $t = 3\frac{5}{6}$
 $N(3\frac{5}{6}) = 4800$

- b. $y_1 = 480x^2 - 40x^3$
de optie maximum geeft $x = 8$ en $y = 10240$
dus om 17.00 uur zijn er 10240 bezoekers
- c. $y_2 = 8000$ de optie intersect geeft: $x = 5,58 \vee x = 10$
dus om 14.35 uur en 19.00 uur

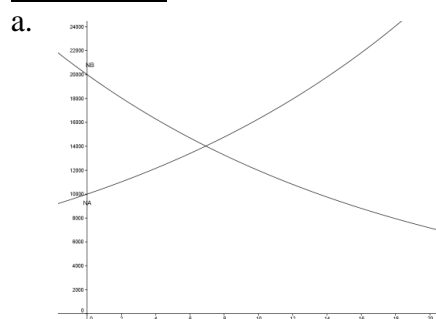
Opgave 54:

- a. $N(1) - N(0) = 193 - 200 = -7$ dus 7 miljoen
- b. $N(6) - N(5) = 368 - 285 = 83$ dus 83 miljoen
- c. $N(7) = 487$
 $N(8) = 648$
 $N(9) = 857$
dus van $t = 8$ naar $t = 9$, dus op 9 september



$y_1 = x^3 - 8x + 200$ de optie minimum geeft $y = 191$ dus 191 miljoen

Opgave 55:



- b. $N_A(20) = 26533$
 $N_A(21) = 27860$
 $N_A(21) - N_A(20) = 27860 - 26533 = 1327$
 $N_B(21) - N_B(21) = 6811 - 7170 = -359$
- c. $N_A(6) = 13401$
 $N_A(7) = 14071$
 $N_A(8) = 14775$
dus in 2007
- d. $N_B(6) = 14702$
 $N_B(7) = 13967$
 $N_B(8) = 13268$
dus in 2007

- e. $N_A(6) - N_B(6) = -1301$
 $N_A(7) - N_B(7) = 104$
 $N_A(8) - N_B(8) = 1506$
dus in 2007

Opgave 56:

- a. $y_1 = -0,0004x^3 + 0,04x^2 + 0,28x$
de optie maximum geeft $x = 70$ en $y = 78,4$
dus $78,4 \frac{\text{mg}}{\text{l}}$ na 70 minuten
- b. $y_2 = 20$ de optie intersect geeft $x = 21,129$
 $y_3 = 60$ de optie intersect geeft $x = 47,007$
 $\Delta t = 47,007 - 21,129 = 25,878$ dus 25 min en 53 sec

Opgave 57:

- $y_1 = 80 \cdot 0,97^x + 20$
 $y_2 = 85$ de optie intersect geeft $x = 6,817$
 $y_3 = 55$ de optie intersect geeft $x = 27,141$
 $\Delta t = 27,141 - 6,817 = 20,324$ dus 20 minuten