2.4 Vergelijkingen en ongelijkheden

Opgave 41:
Intersect geeft $x = -1{,}83 \quad \vee \quad x = 3{,}83$

Opgave 42:
a. $x^2 + 6 = 5x$
$x^2 - 5x + 6 = 0$
$(x-2)(x-3) = 0$
$x = 2 \quad \vee \quad x = 3$

b. $x^2 = x$
$x^2 - x = 0$
$x(x-1) = 0$
$x = 0 \quad \vee \quad x = 1$

c. $x^2 = 11$
$x = \sqrt{11} = 3{,}32 \quad \vee \quad x = -\sqrt{11} = -3{,}32$

d. $t^2 + 5t = 14$
$t^2 + 5t - 14 = 0$
$(t-2)(t+7) = 0$
$t = 2 \quad \vee \quad t = -7$

e. $3q^2 - 18q = 0$
$3q(q-6) = 0$
$q = 0 \quad \vee \quad q = 6$

f. $3a^2 = 18$
$a^2 = 6$
$a = \sqrt{6} = 2{,}45 \quad \vee \quad a = -\sqrt{6} = -2{,}45$

Opgave 43:
a. $5x^2 + 15x - 50 + 0$
$x^2 + 3x - 10 = 0$
$(x+5)(x-2) = 0$
$x = -5 \quad \vee \quad x = 2$

b. $0{,}5x^2 - 2x = 6$
$0{,}5x^2 - 2x - 6 = 0$
$x^2 - 4x - 12 = 0$
$(x-6)(x+2) = 0$
$x = 6 \quad \vee \quad x = -2$

c. $0{,}02a^2 - 80a = 0$
$0{,}02a(a - 4000) = 0$
$a = 0 \quad \vee \quad a = 4000$

d. $2p^2 - 5p = 3{,}4p$
$2p^2 - 8{,}4p = 0$
$2p(p - 4{,}2) = 0$

$p = 0 \quad \vee \quad p = 4{,}2$

Opgave 44:

a. $2x^2 = 9x + 5$

$2x^2 - 9x - 5 = 0$

$x = \dfrac{9 \pm \sqrt{81 + 40}}{4} = \dfrac{9 \pm \sqrt{121}}{4} = \dfrac{9 \pm 11}{4}$

$x = \dfrac{9 + 11}{4} = 5 \quad \vee \quad x = \dfrac{9 - 11}{4} = -\frac{1}{2}$

b. $y_1 = 2x^2$ en $y_2 = 9x + 5$

intersect geeft $x = -0{,}5 \quad \vee \quad x = 5$

c. *

d. $y_1 = 5x^2 + 13x$ en $y_2 = x^2 - 9$

intersect geeft $x = -1 \quad \vee \quad x = -2{,}25$

e. $y_1 = 0{,}3x^2 + 2x$ en $y_2 = -1{,}6x^2 + 8$

intersect geeft $x = 1{,}59 \quad \vee \quad x = -2{,}64$

Opgave 45:

a. $x^2 - 5x = 0$

$x(x - 5) = 0$

$x = 0 \quad \vee \quad x = 5$

b. $x^2 - 5x = 24$

$x^2 - 5x - 24 = 0$

$(x - 8)(x + 3) = 0$

$x = 8 \quad \vee \quad x = -3$

c. $-0{,}004x^2 - 120x = 0$

$-0{,}004x(x - 30000) = 0$

$x = 0 \quad \vee \quad x = 30000$

d. $(2x - 1)(3x + 12) = 0$

$2x = 1 \quad \vee \quad 3x = -12$

$x = 0{,}5 \quad \vee \quad x = -4$

e. $(x + 3)^2 - (x + 1)^2 = 8$

$x^2 + 6x + 9 - (x^2 + 2x + 1) = 8$

$x^2 + 6x + 9 - x^2 - 2x - 1 = 8$

$4x = 0$

$x = 0$

f. $(x + 4)^2 = 2x + 16$

$x^2 + 8x + 16 = 2x + 16$

$x^2 + 6x = 0$

$x(x + 6) = 0$

$x = 0 \quad \vee \quad x = -6$

Opgave 46:

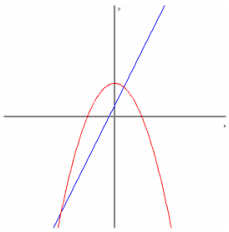
Hij maakt winst als $R > K$ dus $90 < q < 460$

Opgave 47:

a. $y_1 = -0{,}5x^2 + 3$ en $y_2 = 2x + 1$

intersect geeft $x = -4{,}83 \quad \vee \quad x = 0{,}83$

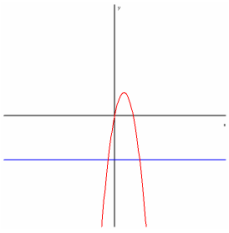
dus $x < -4{,}83 \quad \vee \quad x > 0{,}83$



b. $y_1 = -3x^2 + 5x$ en $y_2 = -4$

intersect geeft $x = -0{,}59 \quad \vee \quad x = 2{,}26$

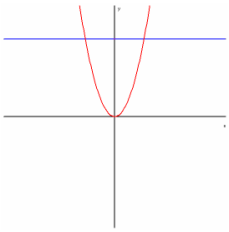
dus $-0{,}59 < x < 2{,}26$



c. $y_1 = x^2$ en $y_2 = 7$

intersect geeft $x = -2{,}65 \quad \vee \quad x = 2{,}65$

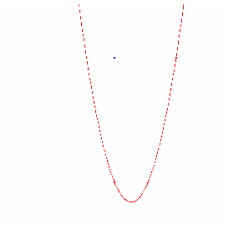
dus $x \le -2{,}65 \quad \vee \quad x \ge 2{,}65$



d. $y_1 = x^2 - 3x$ en $y_2 = 14$

intersect geeft $x = -2{,}53 \quad \vee \quad x = 5{,}53$

dus $-2{,}53 \le x \le 5{,}53$

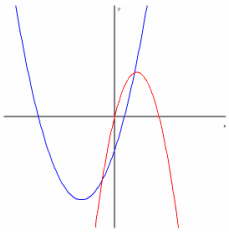


Opgave 48:

a. $y_1 = -x^2 + 4x$ en $y_2 = 0{,}5x^2 + 3x - 3$

intersect geeft $x = -1{,}12 \quad \vee \quad x = 1{,}79$

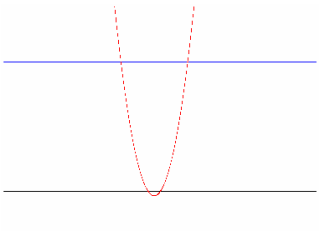
dus $x < -1{,}12 \quad \vee \quad x > 1{,}79$



b. $y_1 = 8x^2 + 6x$ en $y_2 = 35$

intersect geeft $x = -2{,}5 \quad \vee \quad x = 1{,}75$

dus $x \le -2{,}5 \quad \vee \quad x \ge 1{,}75$



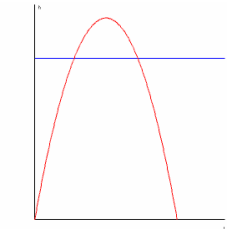
Opgave 49:

$-5t^2+15t>9$

neem $y_1=-5x^2+15x$ en $y_2=9$

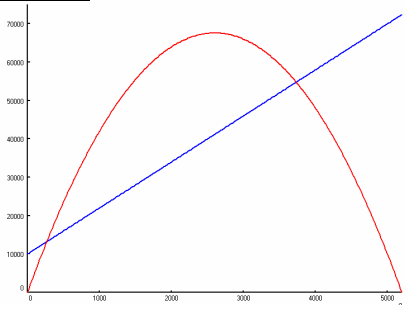
intersect geeft $x=0{,}83 \quad \vee \quad x=2{,}17$

dus $\Delta t=2{,}17-0{,}83=1{,}3$ sec



Opgave 50:

a.



b. intersect geeft $q=267{,}9 \quad \vee \quad q=3732{,}1$
dus vanaf 268 stuks tot en met 3732 stuks

c. het bedrijf lijdt verlies als $O<K$ dus bij een verkoop van minder dan 268 stuks of meer dan 3732 stuks