(1) $\int_0^r \left(x^2 + \frac{1}{3}\right) dx = -2$

$\frac{1}{3} x^3 + \frac{1}{3} x \Big|_0^r = -2$

$\frac{1}{3} r^3 + \frac{1}{3} r = -2$

$\Rightarrow r^3 + r + 6 = 0$ D

(2) $x + y = 6 \Rightarrow y = 6 - x$

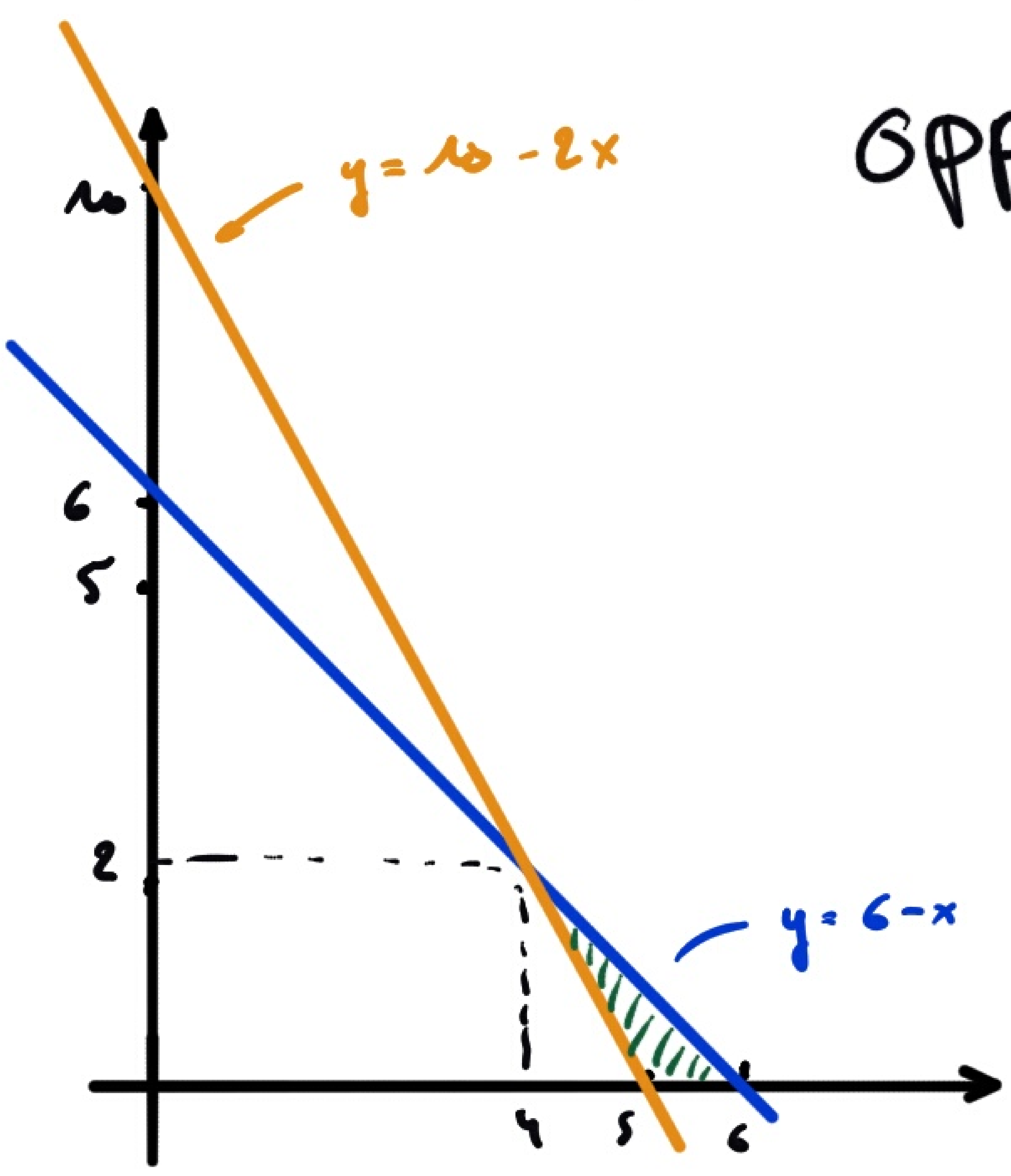
$2x + y = 10 \Rightarrow y = 10 - 2x$

$\Rightarrow$ snijpunt $6 - x = 10 - 2x$

$$\begin{cases} x = 10 - 6 = \boxed{4} \\ y = 6 - x = 6 - 4 = \boxed{2} \end{cases}$$

$y = 0$ $$\begin{cases} x = 6 \\ 2x = 10 \Rightarrow x = 5 \end{cases}$$

$x = 0$ $$\begin{cases} y = 6 \\ y = 10 \end{cases}$$



Opp = Δ blauwe rechte
− Δ gearceerd

$$= \frac{6.6}{2} - \frac{1}{2} . 2 . (6-5)$$

$$= 18 - 1 = 17$$ B

OF $$\int_0^4 (6-x)\,dx + \int_4^5 (10-2x)\,dx$$

$$\left(6x - \frac{x^2}{2}\right)\Big|_0^4 + \left(10x - x^2\right)\Big|_4^5$$

$$(16) + [25 - 24] = \underline{17}$$ B

③ ${}^{2}\log(x) = a \iff 2^a = x$

$? \ {}^{2}\log(\sqrt{a}) \qquad a = \dfrac{4\sqrt[3]{2}\sqrt{8}}{\sqrt[6]{32}}$

$$\log\sqrt{a} = \frac{1}{2}\log a = \frac{1}{2}\log\frac{4\sqrt[3]{2}\sqrt{8}}{\sqrt[6]{32}}$$

$$= \frac{1}{2}\left[\log 4 + \log\sqrt[3]{2} + \log\sqrt{8} - \log\sqrt[6]{32}\right]$$

$$= \frac{1}{2}\left[2 + \frac{1}{3}\log 2 + \frac{1}{2}\log 8 - \frac{1}{6}\log 32\right]$$

$$= \frac{1}{2}\left[2 + \frac{1}{3}\cdot 1 + \frac{1}{2}\cdot 3 - \frac{1}{6}\cdot 5\right]$$

$$= \frac{1}{2}\left[\frac{2.6}{6} + \frac{2}{6} + \frac{3.3}{6} - \frac{5}{6}\right]$$

$$= \frac{1}{2}\cdot\frac{18}{6} = \frac{9}{6} = \frac{3}{2}$$

D

4)

$$\begin{cases} g_2 = g_1 \cdot 1{,}2 \\ g_3 = g_1 \cdot 0{,}9 \end{cases}$$

? g_2

$$\frac{g_1 + g_2 + g_3}{3} = 31$$

$\Rightarrow g_1 + (g_1 \cdot 1{,}2) + (g_1 \cdot 0{,}9) = 93$

$\Rightarrow g_1 (1 + 1{,}2 + 0{,}9) = 93$

$\Rightarrow g_1 (3{,}1) = 93$

$\Rightarrow g_1 = \dfrac{\cancel{93}^{3} \cdot \cancel{10}}{\cancel{31}_{1}} = 30$

$g_2 = g_1 \cdot 1{,}2 = \dfrac{3\cancel{0} \cdot 12}{1\cancel{0}} = \boxed{36}$

D

(5) $f(x) = (x+1)^{3/2}$

snijpunt y-as : $x = 0 \rightarrow y = 1$]

raaklijn : $x+1 = u \Rightarrow du = dx$

$$\frac{dy}{du} = \frac{d(u^{3/2})}{du} = \frac{3}{2} u^{\left(\frac{3}{2}-1\right)} = \frac{3}{2} u^{1/2}$$

$$\Rightarrow \frac{dy}{dx} = \frac{3}{2} \sqrt{x+1}$$

$\Rightarrow$ in $x = 0 \rightarrow \frac{dy}{dx} = \frac{3}{2}$ = rico

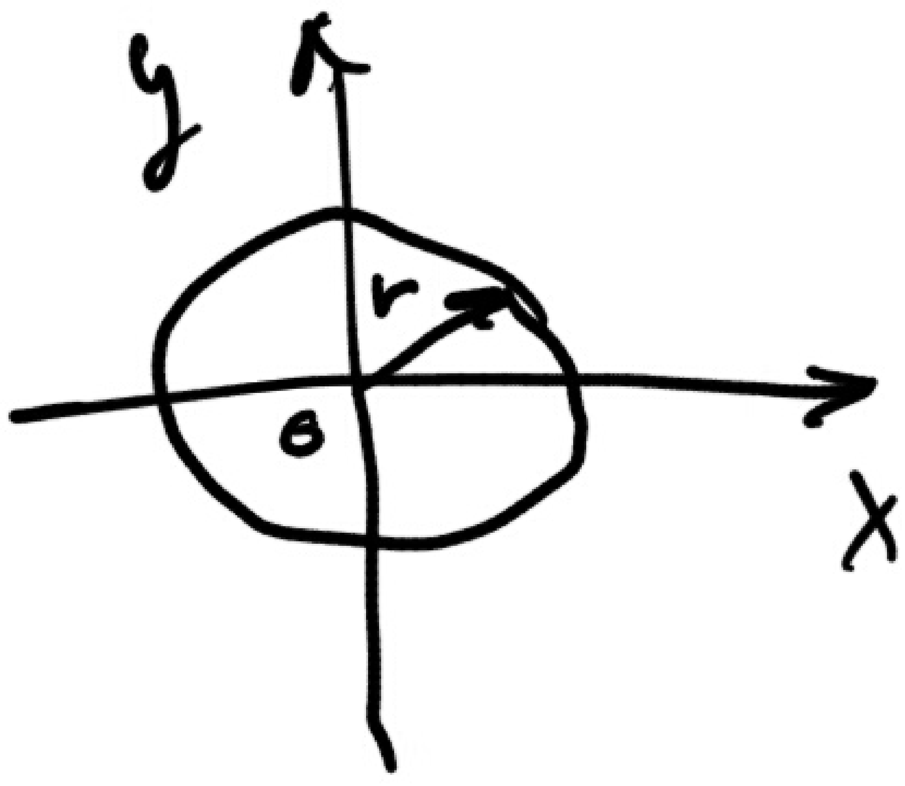
rechte : $y = ax + b = \frac{3}{2}x + 1 = \frac{3x+2}{2}$

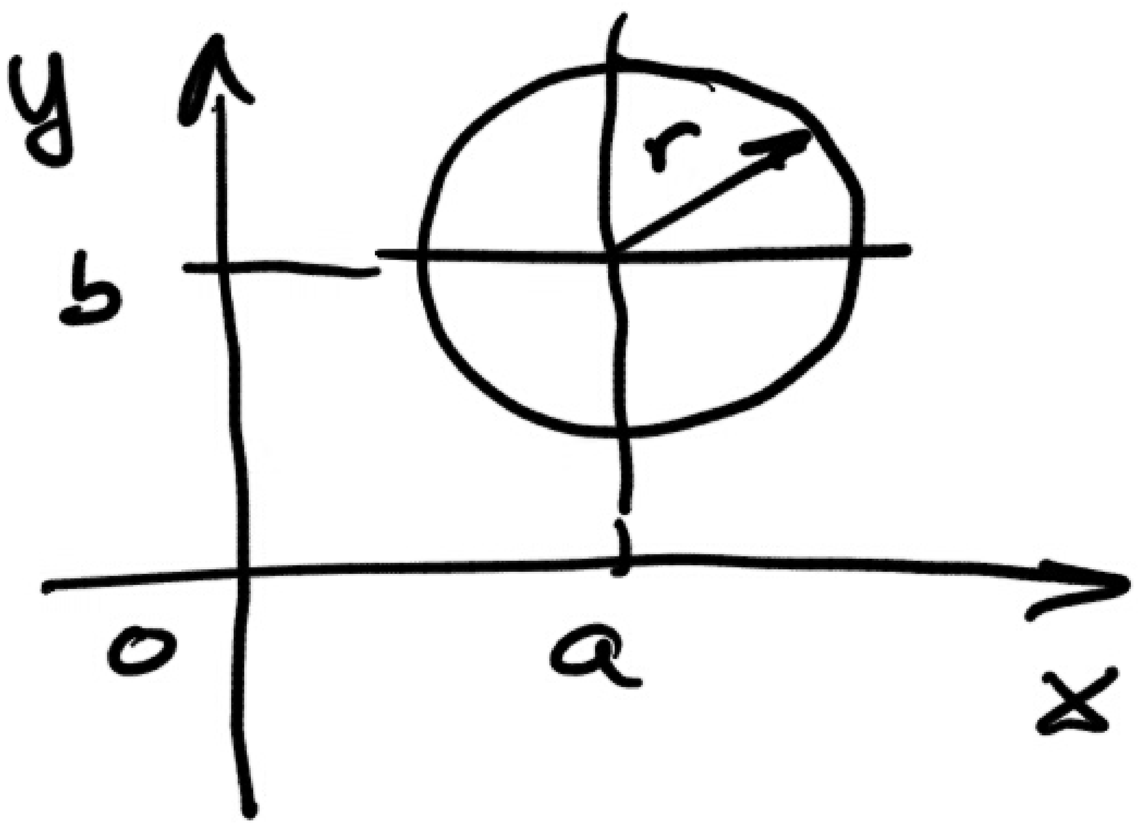
rico   y voor x = 0

$$\Rightarrow 2y - 3x = 2$$

C

6

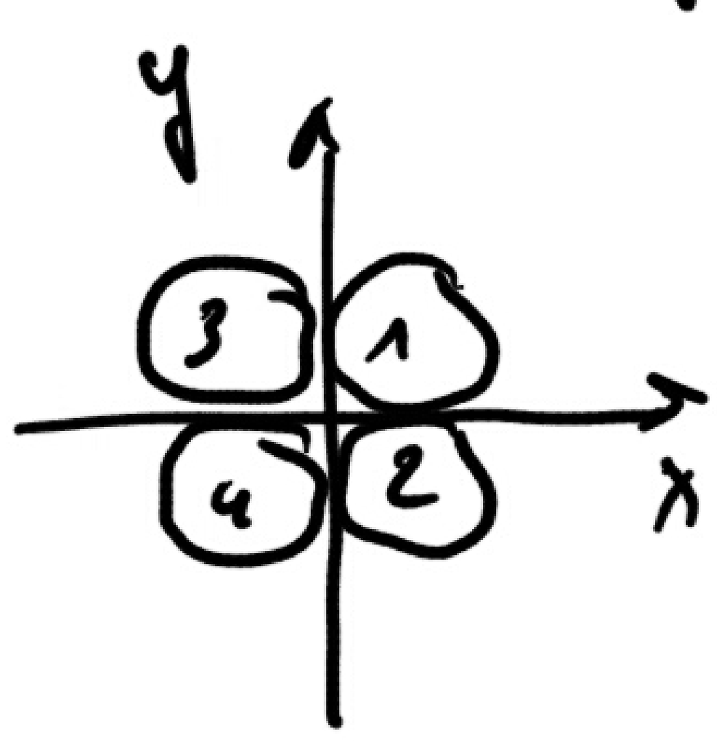




$r^2 = x^2 + y^2$ $\qquad$ $r^2 = (x-a)^2 + (y-b)^2$

$r^2 = x^2 - 2ax + a^2 + y^2 - 2by + b^2$

$r^2 = x^2 + y^2 + 2(-ax - by) + a^2 + b^2$



(1) $a = b = r \Rightarrow r^2 = x^2 + y^2 + 2r(-x - y) + 2r^2$

$+x \quad -y$!

(3) $-a = b = r \Rightarrow r^2 = x^2 + y^2 + 2r(x - y) + 2r^2$

$\Rightarrow -r^2 = x^2 + y^2 + 2r(x - y)$

$2r = 1 \Rightarrow r = \frac{1}{2}$

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

$-\frac{1}{4} = x^2 + y^2 + x - y$ $\qquad$ B

⑦ $p(x) = 8x^3 + 8 \quad / x + a \quad a \in \mathbb{R}$

rest $/ x + 2a$?

nulpunt $\Rightarrow x = -1 \Rightarrow 8(-1)^3 + 8 = 0$

Horner: $\longrightarrow$ delen $(x-a)$!

$$\begin{array}{r|cccc}
 & x^3 & x^2 & x^1 & x^0 \\
 & 8 & 0 & 0 & 8 \\
-a & \downarrow & -8a & 8a^2 & -8a^3 \\
\hline
 & 8 & -8a & 8a^2 & 8 - 8a^3 = 0
\end{array}$$

$\hookrightarrow a = 1 \Rightarrow 2a = 2$

Controle:

$(8x^2 - 8x + 8)(x+1) = 8x^3 + \cancel{8x^2} - \cancel{8x^2} - \cancel{8x} + \cancel{8x} + 8 = \underline{8x^3 + 8}$

Horner:

$$\begin{array}{r|cccc}
 & 8 & 0 & 0 & 8 \\
-2 & \downarrow & -16 & 32 & -64 \\
\hline
 & 8 & -16 & 32 & -56
\end{array}$$

B

Controle:

$(8x^2 - 16x + 32)(x+2) - 56$

$8x^3 + \cancel{16x^2} - \cancel{16x^2} - \cancel{32x} + \cancel{32x} + 64 - 56$

$\underline{8x^3 + 8}$

⑧ $\begin{pmatrix} a & b \\ c & d \end{pmatrix}\begin{pmatrix} e & f \\ g & h \end{pmatrix} = \begin{pmatrix} ae+bg & af+bh \\ ce+dg & cf+dh \end{pmatrix}$

$A \cdot A = A \Rightarrow$ Idempotent

$$A = \begin{pmatrix} a & b \\ 1-a & 0 \end{pmatrix}$$

$$A \cdot A = \begin{pmatrix} a & b \\ 1-a & 0 \end{pmatrix}\begin{pmatrix} a & b \\ 1-a & 0 \end{pmatrix}$$

$$= \begin{pmatrix} a^2 + b(1-a) & ab+0 \\ (1-a)a+0 & (1-a)b+0 \end{pmatrix}$$

$$= \begin{pmatrix} a & b \\ 1-a & 0 \end{pmatrix}$$

$$\Rightarrow \begin{cases} a^2 + b(1-a) = a \\ ab = b \quad \Rightarrow \text{enkel als } \underline{a = 1} \\ (1-a)a = 1-a \\ (1-a)b = 0 \end{cases}$$

b doet er niet toe!

$\Rightarrow a = 1$ en $b =$ willekeurig! Ⓓ

(9) Keuze 1 groep van 3 meisjes uit 6

$$C_6^3 = \frac{6!}{3!(6-3)!} = \frac{\cancelto{2}{6} \cdot 5 \cdot \cancelto{2}{4} \cdot \cancel{3 \cdot 2 \cdot 1}}{\cancel{3} \cdot \cancel{2} \cdot 1\,\cancel{(3 \cdot 2 \cdot 1)}} = 20$$

Maar we kiezen 2 groepen van 3, dus slechts de helft mogelijkheden: $\boxed{10}$

=> Als je 1 groep kiest, heb je ook de 2e gekozen —> de 3 die overblijven

Een groep van meisjes kan nu gecombineerd worden met jongen 1 of jongen 2.

Mogelijke keuzes $= 10 \cdot 2 = \boxed{20}$

A

10

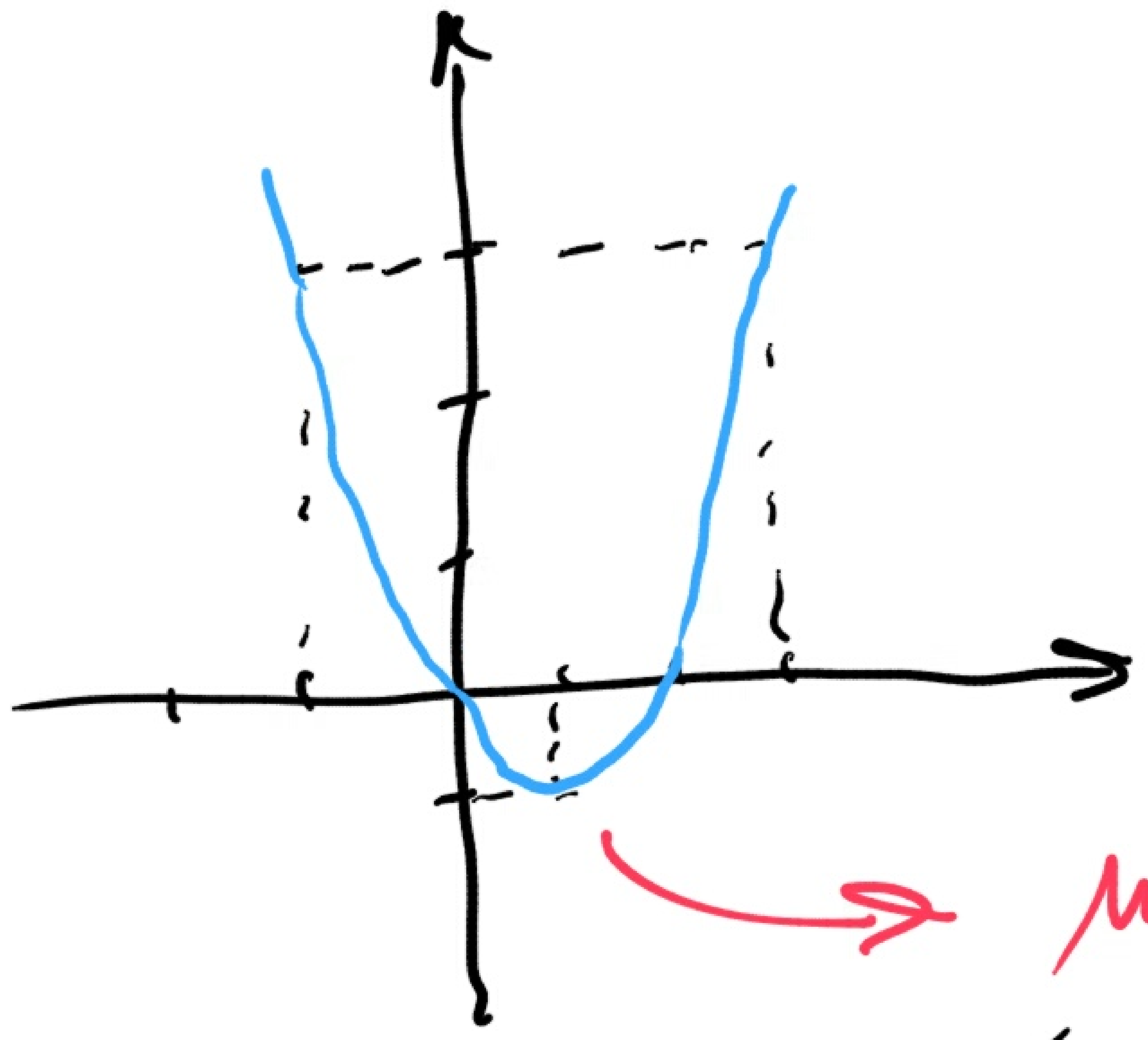
$$2x - 3y = -m^2$$
$$(\times 2) \quad -x + y = m$$

$$0 - y = -m^2 + 2m \Rightarrow y = m^2 - 2m$$

$y = m(m-2) \rightarrow$ nulpunten $\begin{cases} m = 2 \\ m = 0 \end{cases}$

m	1	−1	3
y	−1	3	3

$\Rightarrow$ parabool



minimum = −1

$$\frac{dy}{dm} = 0 = 2m - 2 \Rightarrow m = 1$$
$$\Rightarrow y = -1$$

Dus $y \geq -1$ B

Als je het uitwerkt voor x krijg je een waarde die niet tussen de mogelijke antwoorden staat!