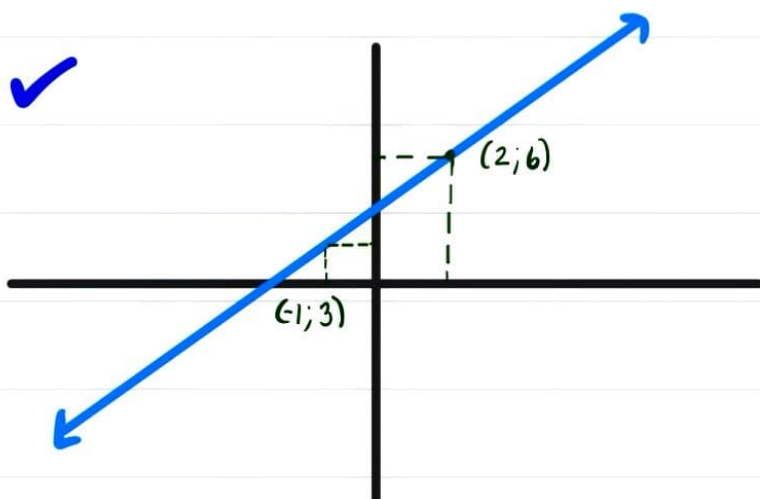


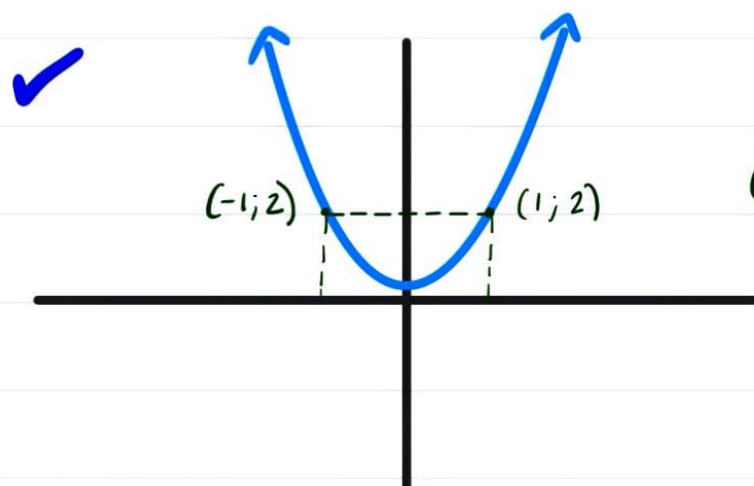
Funksies en Inverses: Deel 1

Tipe:



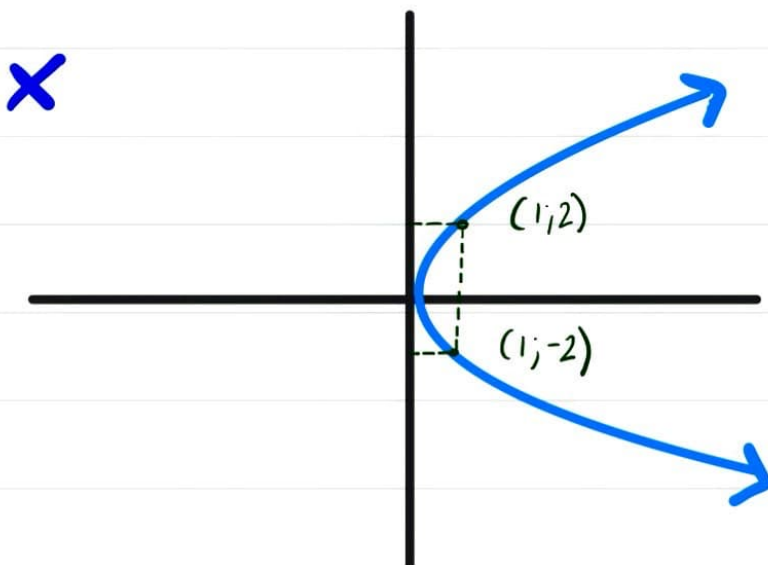
$(1;3); (2;6)$

— |
een-tot-een
FUNKSIE



$(-1;2); (1;2)$

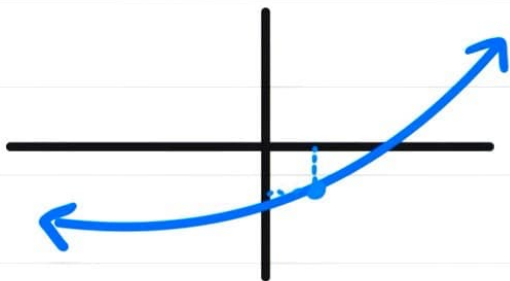
— |
meer-tot-een
FUNKSIE



$(1;-2); (1;2)$

— |
een-tot-meer
RELASIE

Funksie: Elke x -waarde in die definisie versameling word met slegs 1 y -waarde in die waarde versameling verbind.

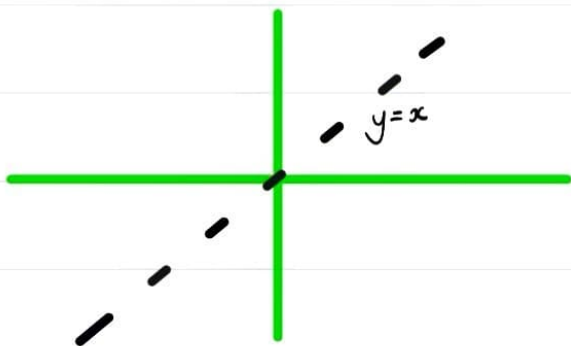


— |
een - tot - een FUNKSIE



inverse sal ook 'n FUNKSIE wees.

INVERSE: Refleksie om lyn $y=x$



① Ruil x en y om

② Maak y onderwerp

Bepaal die vergelyking van die inverses:

Reguit lyn:

① $f(x) = 2x - 4$,

$x \in [-1; 3]$

$y \in [-6; 2]$

$y = 2(-1) - 4 = -6$

$y = 2(3) - 4 = 2$

(y=0)
x-afsnit
 $x = 2$

(x=0)
y-afsnit
 $y = -4$

Inverse:

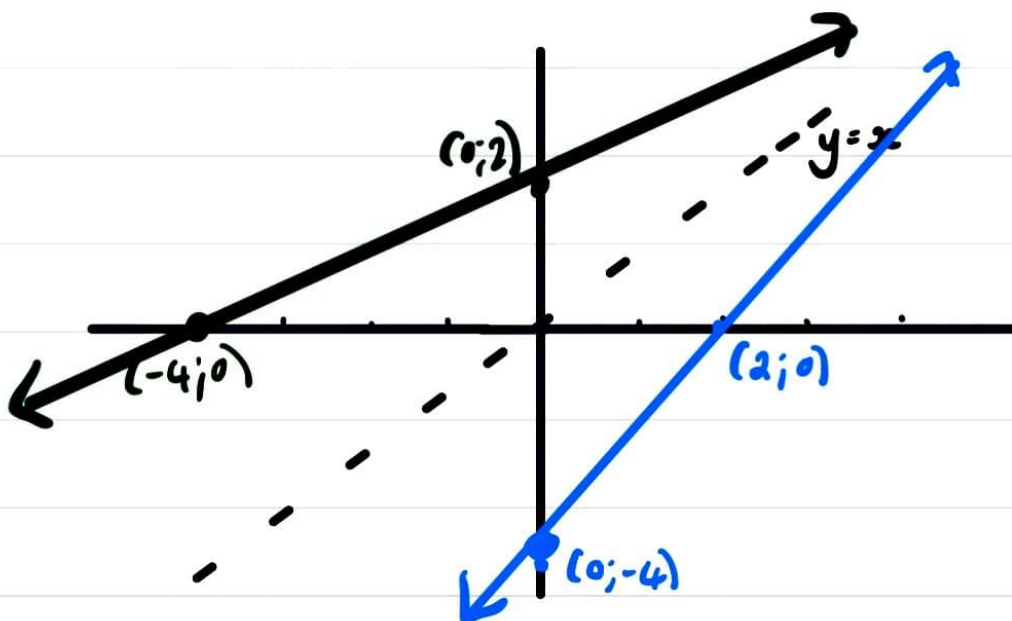
① $x = 2y - 4$

$y \in [-1; 3]$
 $x \in [-6; 2]$

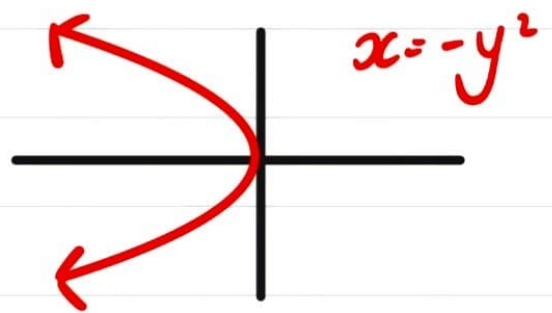
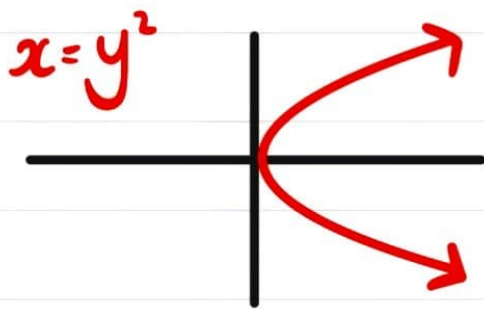
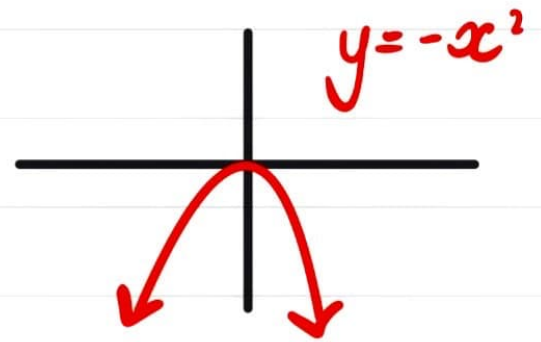
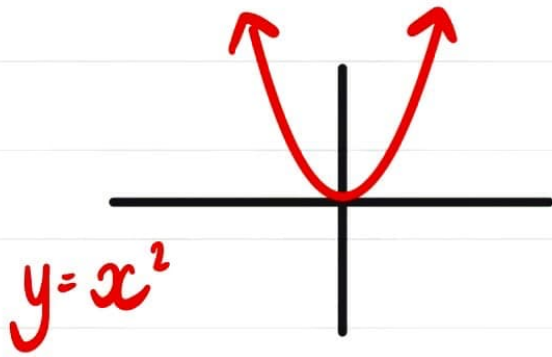
(y=0)
x-afsnit
 $x = -4$

(x=0)
y-afsnit
 $y = 2$

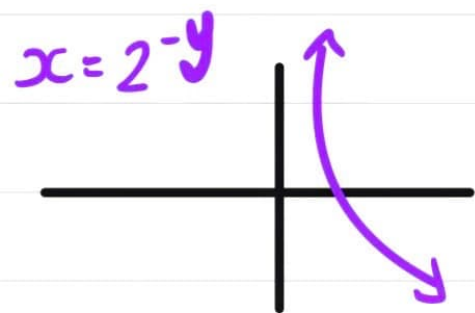
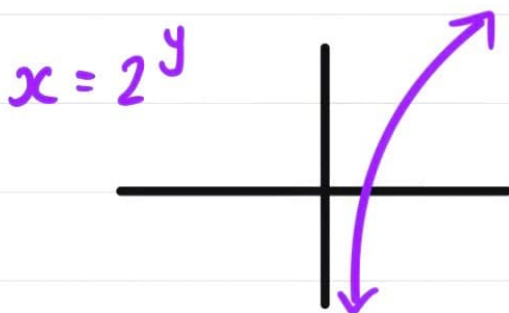
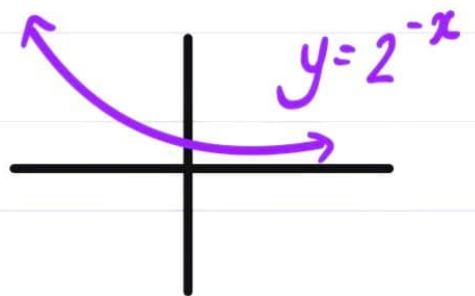
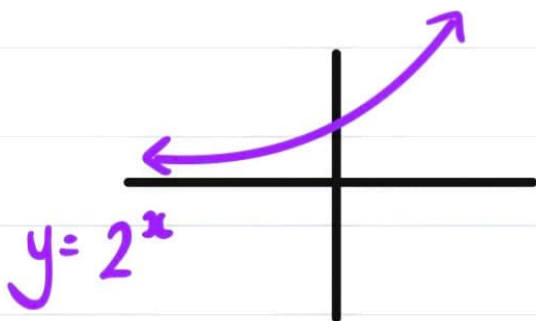
② $y = \frac{x}{2} + 2$
 $f^{-1}(x) = \frac{x}{2} + 2$



Parabool:

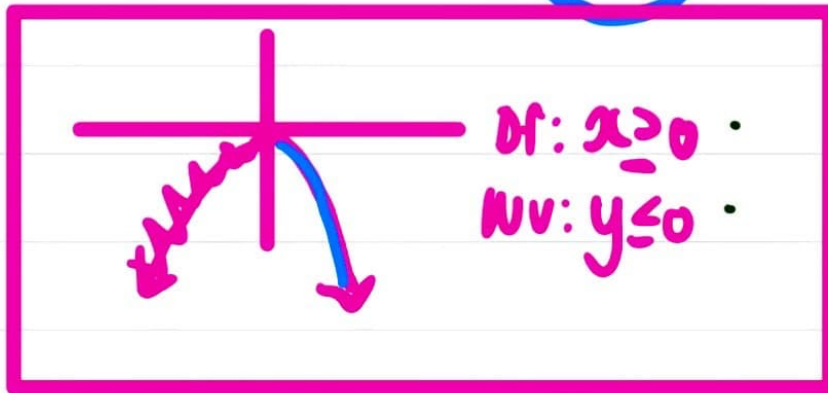


Eksponensiële



Parabool:

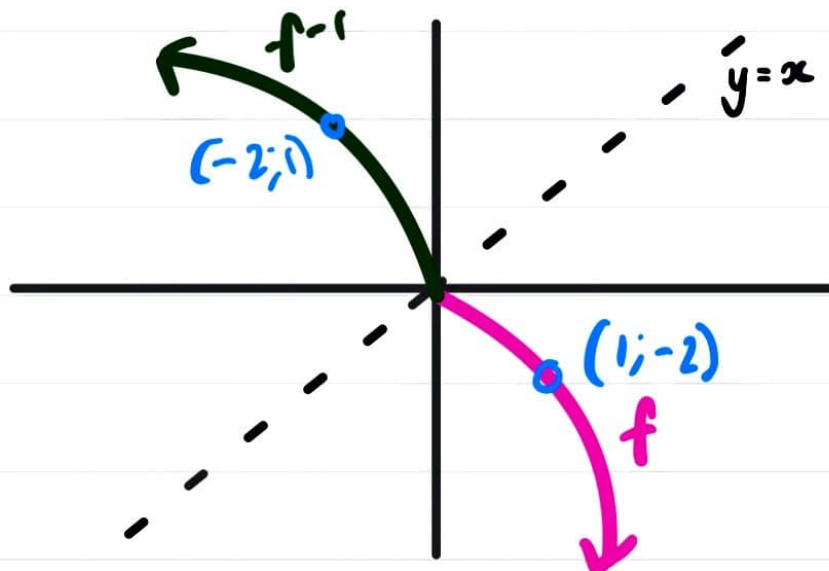
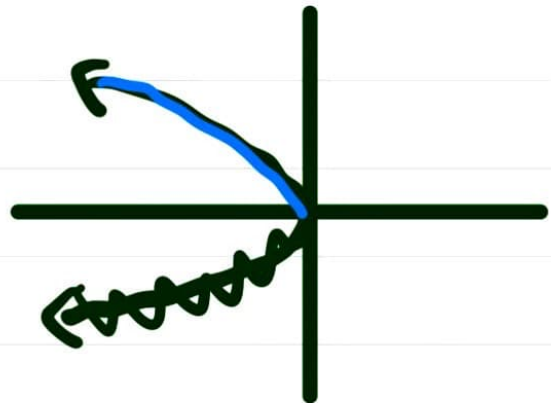
② $f(x) = -2x^2$; $x \geq 0$



Inverse:

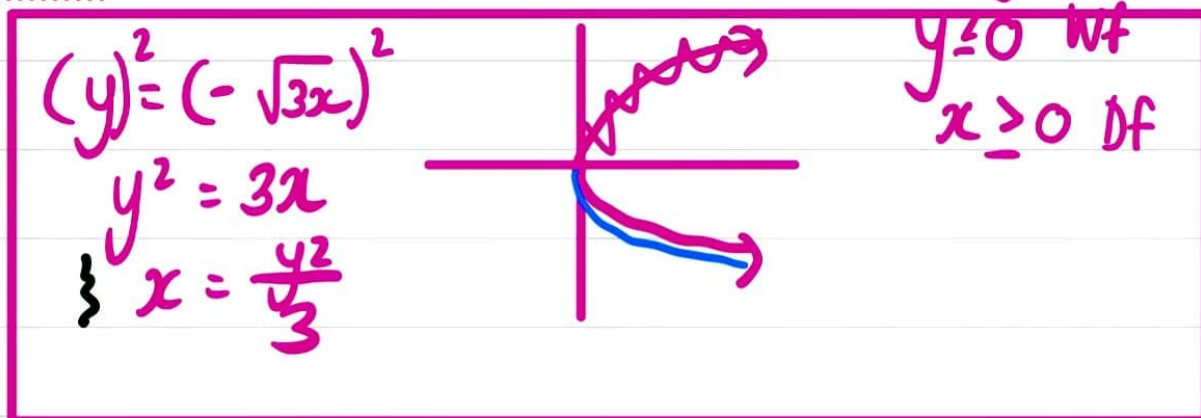
① $x = -2y^2$ • $y \geq 0$
• $x \leq 0$

② $\frac{x}{-2} = y^2$
 $y = \pm \sqrt{\frac{x}{-2}}$ $y \geq 0$
 $x \leq 0$



Parabool (Wortel):

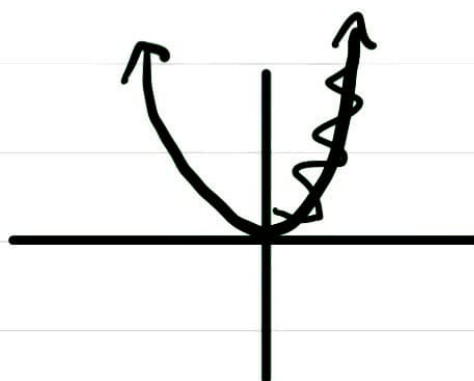
③ $f(x) = -\sqrt{3x}$



Inverse:

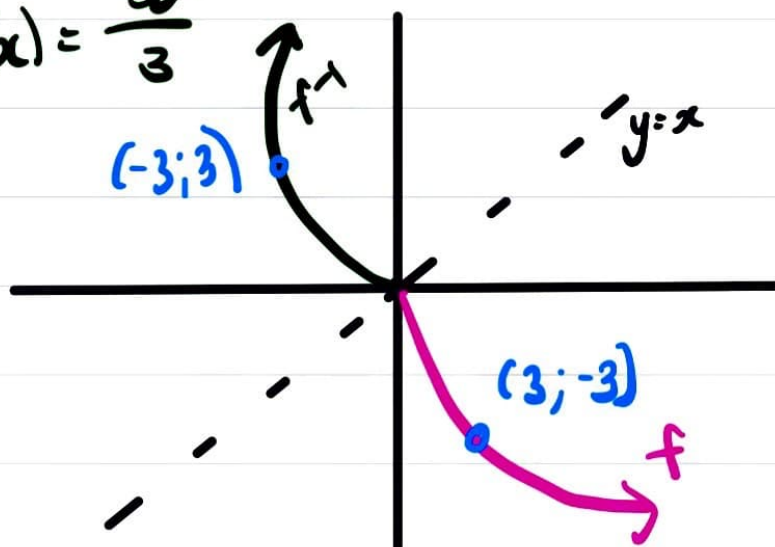
① $x = -\sqrt{3y}$

$x \leq 0$
 $y \geq 0$



② $x^2 = 3y$
 $y = \frac{x^2}{3}$

$f^{-1}(x) = \frac{x^2}{3}$



eksponent = log, grondtal, antw

Eksponensiël:

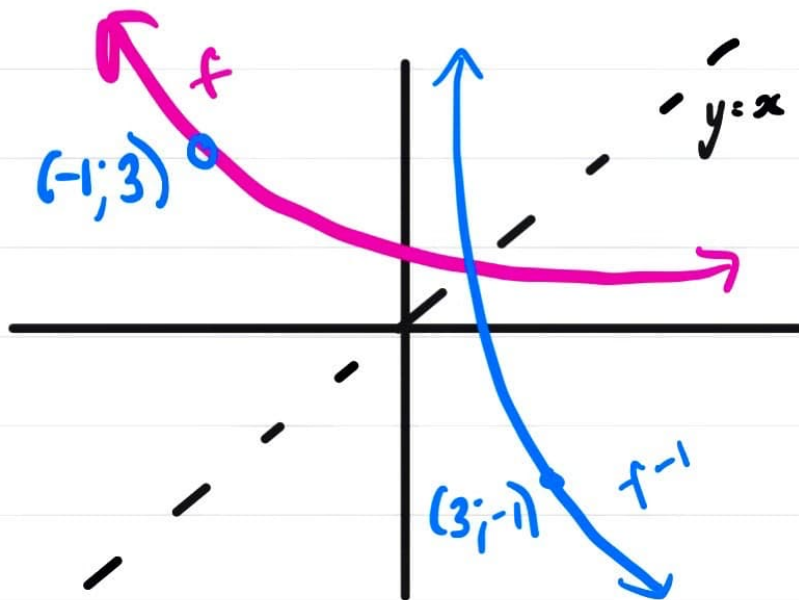
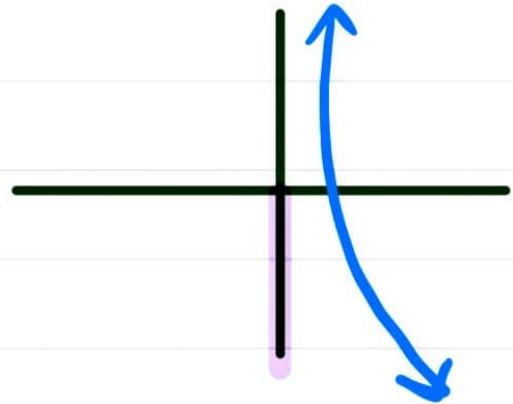
④ $f(x) = \frac{1}{3}^x = 3^{-x}$



Inverse:

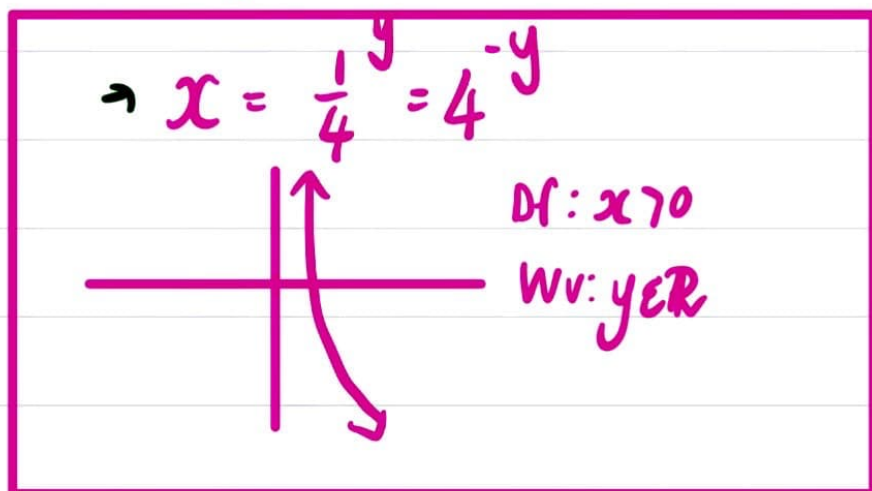
① $x = \frac{1}{3}^y = 3^{-y}$ $y \in \mathbb{R}$
 $x > 0$

② $y = \log_{\frac{1}{3}} x$ $y \in \mathbb{R}$
 $x > 0$



Ekspansi (Log):

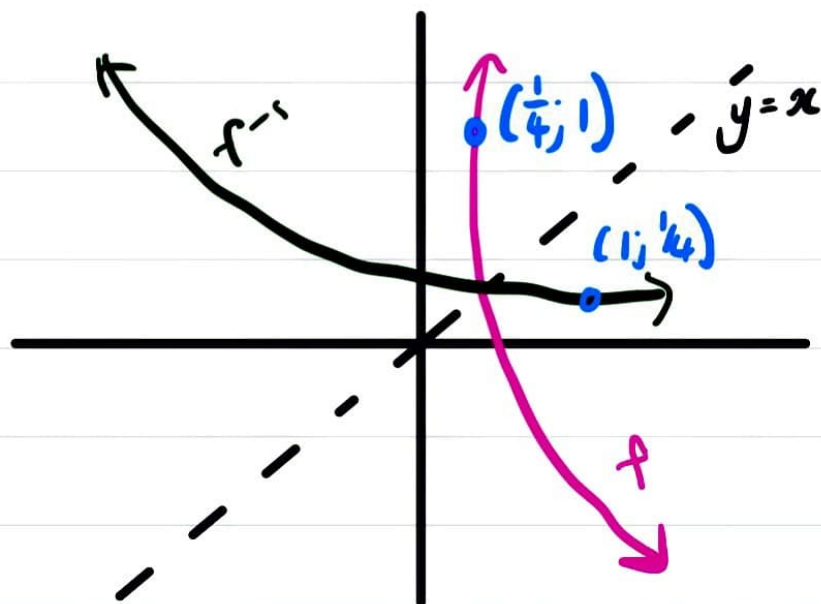
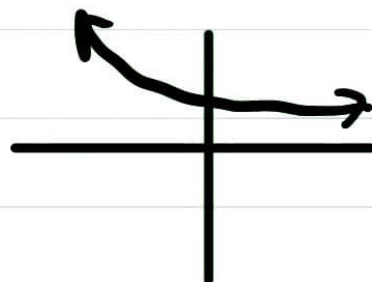
⑤ • $f(x) = \log_{1/4} x$
 ↓ eksp $\frac{1}{4}$ → antw y grandtal



Inverse:

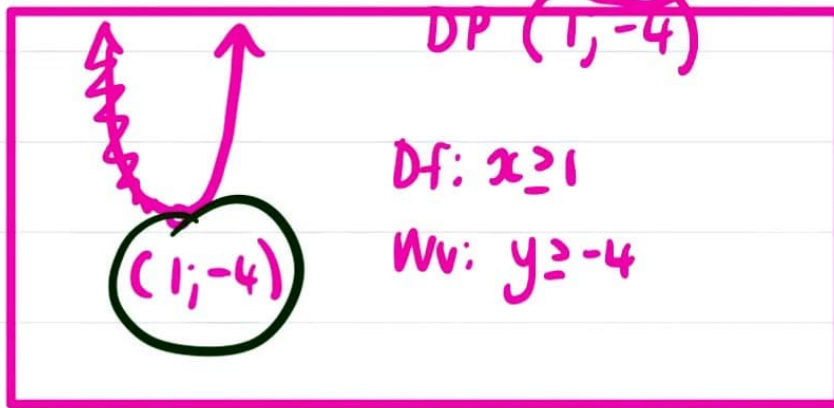
① $x = \log_{1/4} y$ $y > 0$
 $x \in \mathbb{R}$

② $y = \frac{1}{4}^x = 4^{-x}$ $y > 0$
 $x \in \mathbb{R}$



Parabool (draaipunt):

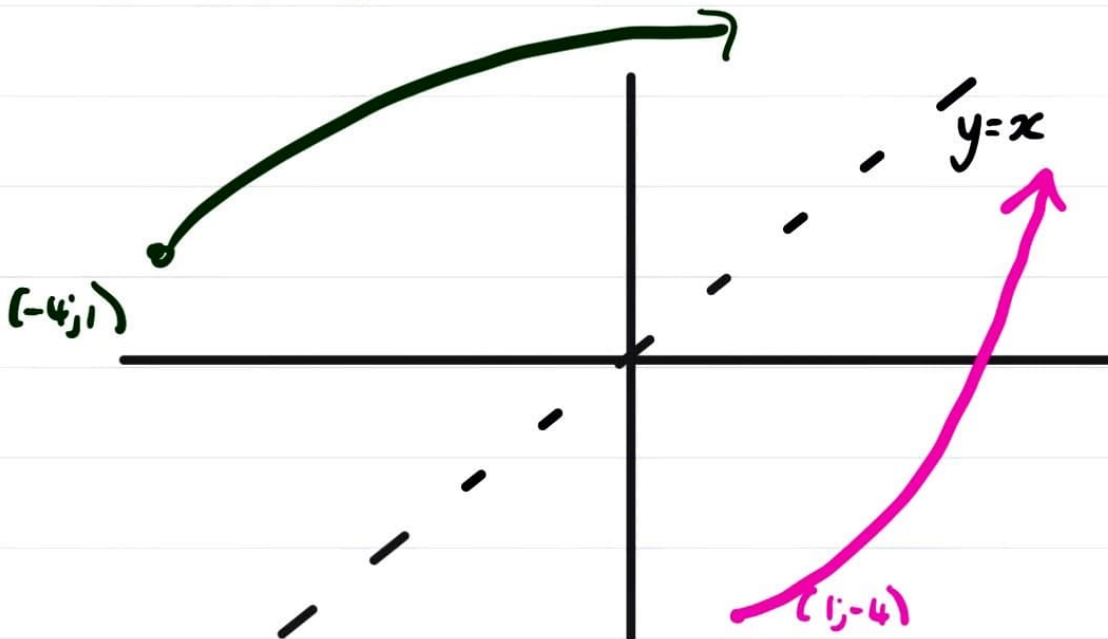
⑥ $f(x) = (x-1)^2 - 4$; $x \geq 1$



Inverse:

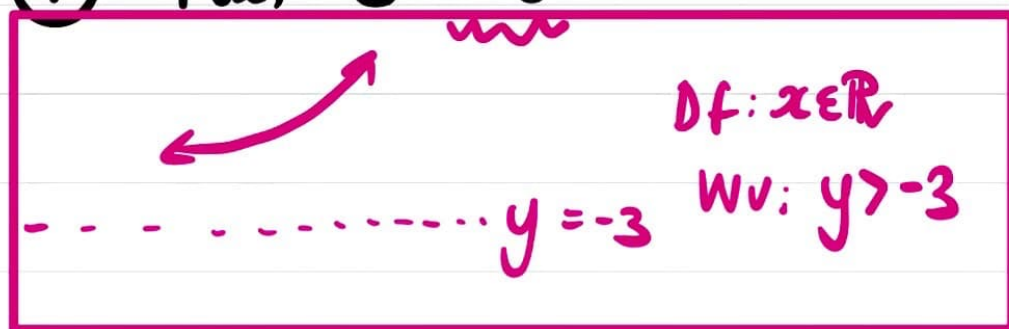
① $x = (y-1)^2 - 4$, $y \geq 1$ *
 $x \geq -4$

② $x + 4 = (y-1)^2$
 $\sqrt{x+4} + 1 = y$
 $f^{-1}(x) = \sqrt{x+4} + 1$
 $y \geq 1$
 $x \geq -4$



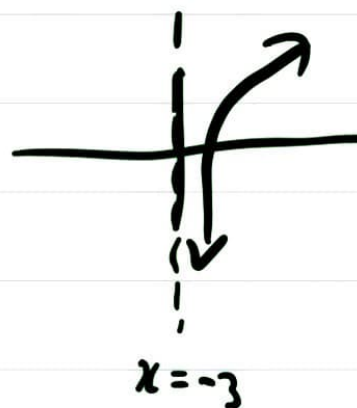
Eksponensiël (asimptoot):

⑦ $f(x) = 3^x - 3$



Inverse:

① $x = 3^y - 3$ $y \in \mathbb{R}$
 $x > -3$



② $(x+3) = 3^y$
 $y = \log_3(x+3)$ $y \in \mathbb{R}$
 $x > -3$
 $f^{-1}(x) = \log_3(x+3)$

