1)

$f(x) = e^x$

$g(x) = \sqrt{x}$

$h(x) = 2x + 1$

i)

$fg(x) = e^{\sqrt{x}}$

domain is when $x \in \mathbb{R}$ and $x \geq 0$

range is $x \geq 1$

ii)

$gh(x) = \sqrt{2x + 1}$

domain is when $x \in \mathbb{R}$ and $x \geq -0.5$

range is $x \geq 0$

iii)

$hf(x) = 2e^x + 1$

domain is when $x \in \mathbb{R}$

range is $x > 0$

iv)

$f^{-1}(x) = ln(x)$

domain is when $x \in \mathbb{R}$

range is $x > 0$

v)

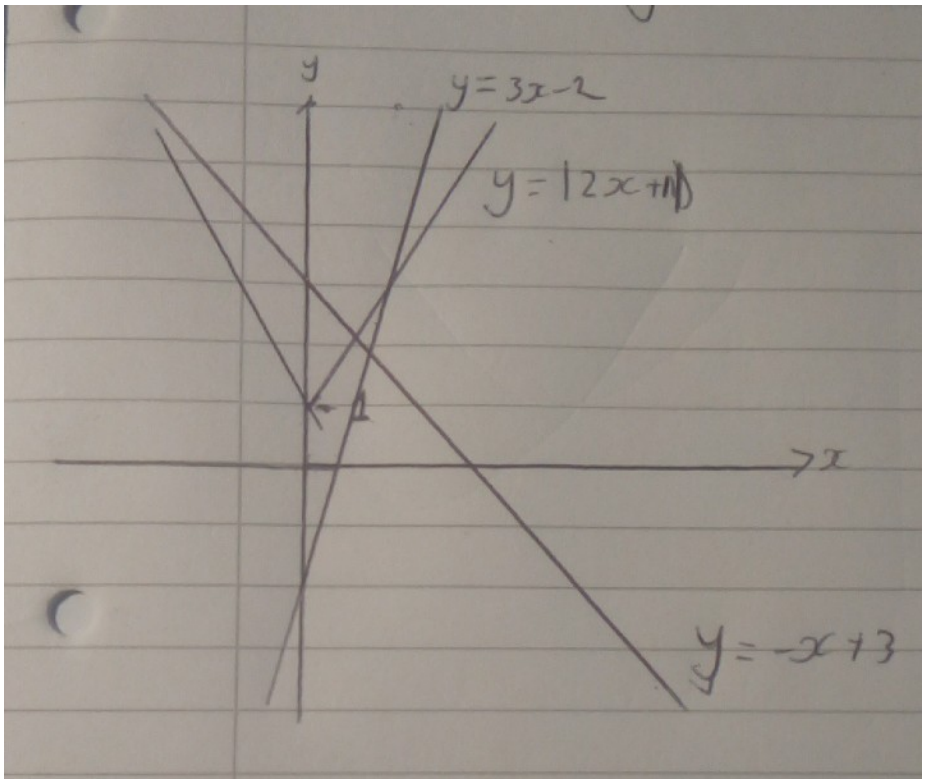
$h^{-1}(x) = \frac{x-1}{2}$

domain is when $x \in \mathbb{R}$

range is when $x \in \mathbb{R}$

2)

i) sketch the graph $y = |2x + 1|$



ii)

a) $|2x+1| = 3-x$

$2x+1 = 3-x$

$3x = 2$

$x = \frac{2}{3}$

$y = \frac{7}{3}$

b) $|2x+1| = 3x-2$

$2x+1 = 3x-2$

$x = 3$

$y = 7$

3)

i)

domain is when $x > 0$

range is $y < 1$

ii)

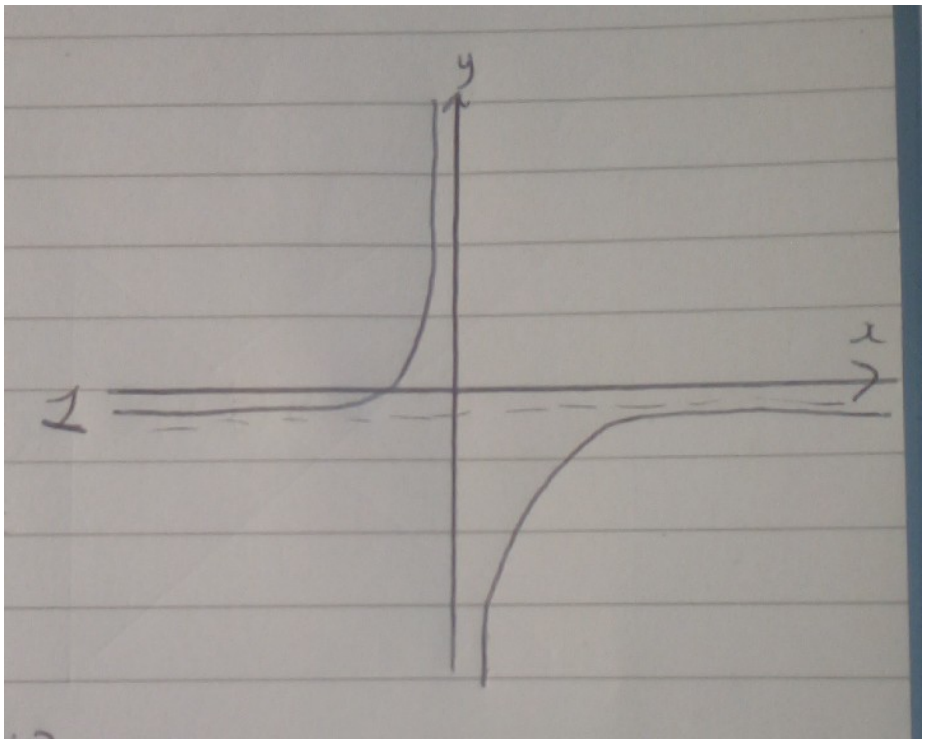
$f^{-1}(x) = \frac{-1}{x-1}$

iii)

domain is when $x \neq 1$

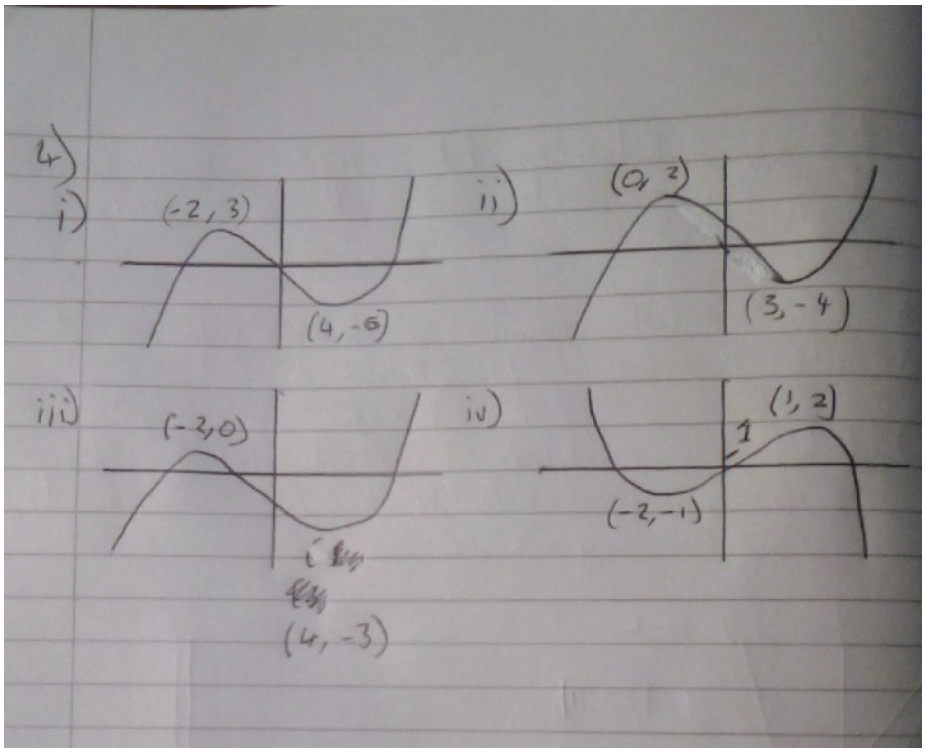
range is $\in \mathbb{R}$

iv)



v) The same except the first one has a asympote of y = 1, and the inverse has an asymptote of y = -1

4)



5)

i)

$|3x - 2| \leq 4$

$3(4) - 2 = 10$

$-(3(4) - 2) = -10$

$x < -10$ or $x > 10$

ii)