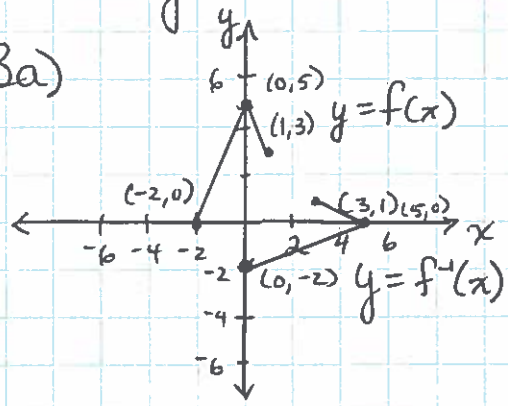
Unit 4 lesson 5

Pg 215 #3a, 5

3a)



5. a) $f(x) = x - 1$

for $f^{-1}(x)$;

$x = y - 1$

$x + 1 = y$

$y = x + 1$

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

b) $f(x) = \frac{x}{2}$

for $f^{-1}(x)$:

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

$2x = y$

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

c) $f(x) = x + 3$

for $f^{-1}(x)$:

$x = y + 3$

$x - 3 = y$

$y = x - 3$

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

d) $f(x) = \frac{4}{3}x$

for $f^{-1}(x)$:

$x = \frac{4}{3}y$

$\frac{4}{3}y = x$

$y = \frac{3}{4}x$

$\therefore f^{-1}(x) = \frac{3}{4}x$

e) $f(x) = 2x + 1$

for $f^{-1}(x)$;

$x = 2y + 1$

$2y + 1 = x$

$2y = x - 1$

$y = \frac{x-1}{2}$

$y = \frac{x}{2} - \frac{1}{2}$

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

f) $f(x) = \frac{x+2}{3}$

for $f^{-1}(x)$:

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

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

$y + 2 = 3x$

$y = 3x - 2$

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

g) $g(x) = \frac{5}{2}x - 4$

for $g^{-1}(x)$,

$x = \frac{5}{2}y - 4$

$x + 4 = \frac{5}{2}y$

$y = \frac{2}{5}(x + 4)$

$y = \frac{2}{5}x + \frac{8}{5}$

$\therefore g^{-1}(x) = \frac{2}{5}x + \frac{8}{5}$

h) $h(x) = 0.2x + 1$

for $h^{-1}(x)$,

$x = 0.2y + 1$

$x - 1 = 0.2y$

(not $0.2 = \frac{1}{5}$)

$y = \frac{x-1}{0.2}$

$y = \frac{x}{0.2} - \frac{1}{0.2}$

$y = 5x - 5$

$\therefore h^{-1} = 5x - 5$