

5 p92

$$y = \frac{x+1}{x-a} \quad \text{よお、逆関数も求めよ}$$

分母を1255x

$$y(x-a) = x+1$$

$$yx - ay = x+1$$

$$(y-1)x = ay+1$$

$$x = \frac{ay+1}{y-1}$$

xとyを交換して

$$y = \frac{ax+1}{x-1}$$

$$f^{-1}(x) = f(x) \text{ かつ}$$

$$\frac{ax+1}{x-1} = \frac{x+1}{x-a}$$

が恒等式 xの値のて

両辺を比較すると

$$\therefore a=1$$

6 p92

$$f(x) = \frac{1}{1-x}, \quad g(x) = \frac{x}{x-1} \quad (x \neq 1)$$

$$(1) f(g(x)) = f\left(\frac{x}{x-1}\right)$$

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

$$= \frac{1 \times (x-1)}{\left(1 - \frac{x}{x-1}\right) \times (x-1)}$$

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

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

$$\therefore f(g(x)) = -x+1 \quad (x \neq 1)$$

$$(2) g(g(x)) = g\left(\frac{x}{x-1}\right)$$

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

$$= \frac{\left(\frac{x}{x-1}\right) \times (x-1)}{\left(\frac{x}{x-1} - 1\right) \times (x-1)}$$

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

$$= \frac{x}{1}$$

$$\therefore g(g(x)) = x \quad (x \neq 1)$$