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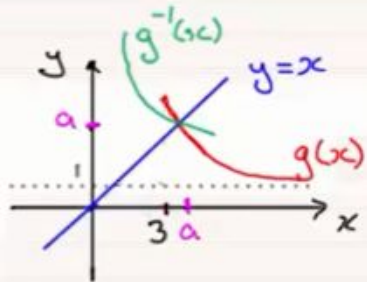
## Domain and Range | Past Paper Question | C3 Edexcel June 2014 Q5(c) method 1

$$g(x) = \frac{x}{x+3} + \frac{3(2x+1)}{x^2+x-6}, \quad x > 3$$

(a) Show that  $g(x) = \frac{x+1}{x-2}, \quad x > 3$  (4)

(b) Find the range of  $g$ . (2)

(c) Find the exact value of  $a$  for which  $g(a) = g^{-1}(a)$ . (4)



when  $g(a) = g^{-1}(a)$

$$\therefore g(a) = a$$
$$\therefore \frac{a+1}{a-2} = a$$
$$\therefore a+1 = a^2 - 2a$$
$$\therefore a^2 - 3a - 1 = 0$$
$$\therefore a = \frac{3 \pm \sqrt{(-3)^2 - 4(1)(-1)}}{2(1)}$$
$$= \frac{3 \pm \sqrt{13}}{2} \quad \text{since } x = a > 3$$
$$\therefore a = \frac{3 + \sqrt{13}}{2}$$

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