

$$3. f(x) = x^3 \quad G(x) = x - 1$$

$$f \circ G(x) = f(G(x)) = f(x-1) = (x-1)^3$$

$$G \circ f(x) = G(x^3) = x^3 - 1$$

$$10. f(n) = 2n \quad G(n) = \lfloor \frac{n}{2} \rfloor$$

$$G \circ f(3) = G(f(3)) = G(6) = 3$$

$$f \circ G(3) = f(G(3)) = f(1) = 2$$

$$12. f(x) = 3x + 2 \quad f^{-1}(y) = (y-2)/3$$

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

$$= (3x+2-2)/3 = 3x/3 = x$$

$$(f \circ f^{-1})(y) = f(f^{-1}(y)) = f((y-2)/3)$$

$$= 3 \cdot \frac{y-2}{3} + 2 = y-2+2 = y$$

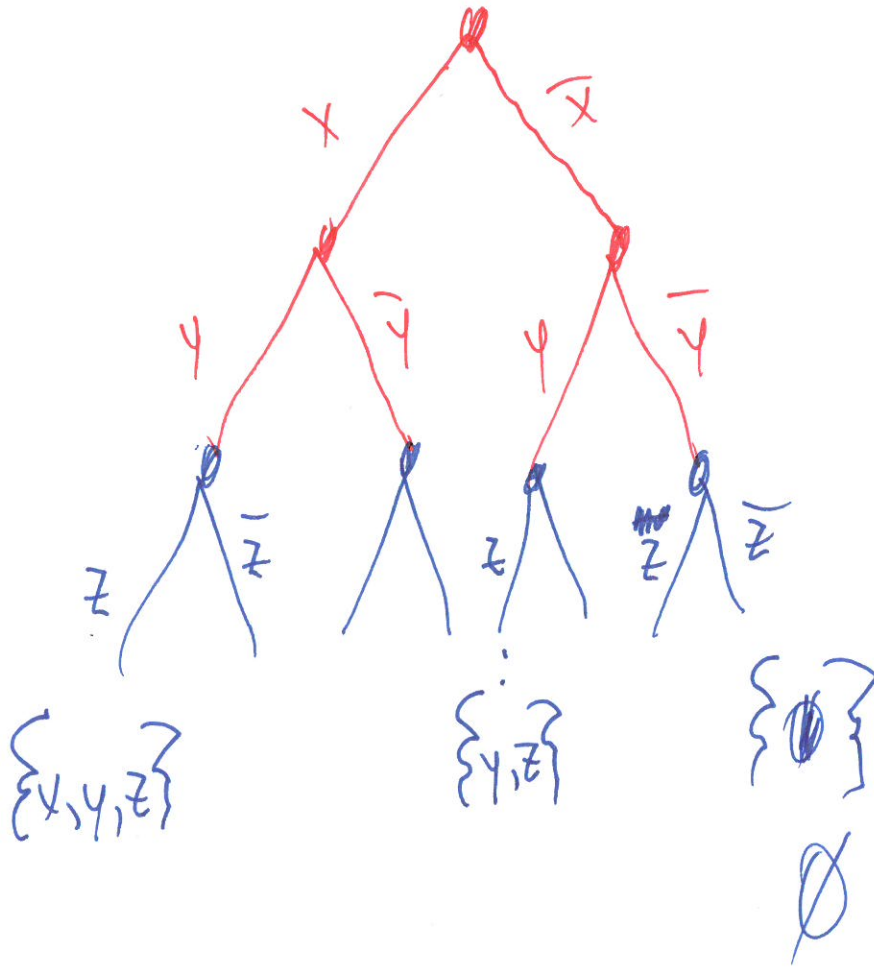
16. Suppose I_Y is the identity function on Y
and f is a function from set X to set Y

then for each $x \in X$

$$I_Y \circ f(x) = I_Y(f(x)) = f(x)$$

hence, by the definition of equality
of functions, $I_Y \circ f = f$

$$I_Y \circ f = f$$



Power Set
Generation