

# NCERT 11.9.3 28Q

EE23BTECH11012 - Chavan Dinesh\*

**Question:** The sum of two numbers is 6 times their geometric mean, show that num-

bers are in the ratio  $\frac{(3 + 2\sqrt{2})}{(3 - 2\sqrt{2})}$ .

**Solution:** Let the two numbers be  $x(0)$  and  $x(2)$  such that  $x(2) \geq x(0)$  and  $x(1)$  is G.M of  $x(0)$  and  $x(2)$ .

Parameter	Description	Value
$x(0)$	first number	
$x(2)$	second number	$x(0)r^2$
$r$	common ratio	
$x(n)$	$(n + 1)^{th}$ term	$(x(0)r^n)u(n)$

TABLE 1: Input table

From Table 1:

$$x(0) + x(2) = 6x(1) \quad (1)$$

$$x(0) + x(0)r^2 = 6x(0)r \quad (2)$$

$$r^2 - 6r + 1 = 0 \quad (3)$$

$$r = 3 \pm 2\sqrt{2} \quad (4)$$

$$\therefore \frac{x(2)}{x(0)} = (3 + 2\sqrt{2})^2 \quad (5)$$

$$= \frac{(3 + 2\sqrt{2})}{(3 - 2\sqrt{2})} \quad (6)$$