

永中鍾定明

DATE 2024

.10

3,4

NO. 三校教 67

三校教作 50

ex. 8 已知  $r, m \in \mathbb{N}$

1) 若  $\binom{12}{r-1} = \binom{12}{r-5}$ , 求  $r$

$$(r-1) + (r-5) = 12$$

$$\Rightarrow 2r = 12 + 6$$

$$\Rightarrow r = 9 \#$$

2) 若  $3\binom{m}{4} = 14\binom{m}{2}$ , 求  $m$

$$\Rightarrow 3 \cdot \frac{m!}{4!(m-4)!} = 14 \cdot \frac{m!}{2!(m-2)!}$$

$$\Rightarrow 3 \cdot \frac{1}{8 \cdot 4} = 14 \cdot \frac{1}{(m-3)(m-2)}$$

$$\Rightarrow 14 \cdot 4 \cdot \frac{1}{(m-3)(m-2)} = 1$$

$$\Rightarrow 14 \cdot 4 = (m-3)(m-2)$$

$$\Rightarrow 14 \cdot 4 = m^2 - 5m + 6$$

$$\Rightarrow m^2 - 5m - 50 = 0 \Rightarrow (m-10)(m+5) = 0$$

$$\Rightarrow m = \frac{5 \pm \sqrt{25 + 200}}{2}$$

$$= \frac{5 \pm \sqrt{225}}{2} = \frac{5 \pm 15}{2} = 10, -5$$

$$\Rightarrow m = 10 \#$$

$$(x-10)(x+5)$$

$$1 \quad -10$$

$$1 \quad 5$$