

Example

Partitions of 6	crank	(mod 11)
6	6	$\equiv 6$
5+1	$1-1=0$	$\equiv 0$
4+2	4	$\equiv 4$
4+1+1	$1-2=-1$	$\equiv 10$
3+3	3	$\equiv 3$
3+2+1	$2-1=1$	$\equiv 1$
3+1+1+1	$0-3=-3$	$\equiv 8$
2+2+2	2	$\equiv 2$
2+2+1+1	$0-2=-2$	$\equiv 9$
2+1+1+1+1	$0-4=-4$	$\equiv 7$
1+1+1+1+1+1	$0-6=-6$	$\equiv 5$

We see that

$$M(0, 11, 6) = M(1, 11, 6) = \dots = M(10, 11, 6) = 1 = \frac{p(6)}{11}$$

Defn: An algebraic number  $\alpha$  is an  $\alpha \in \mathbb{C}$  that satisfies

$$a_n \alpha^n + a_{n-1} \alpha^{n-1} + \dots + a_1 \alpha + a_0 = 0$$

some polynomial of degree  $n$  where  $a_j \in \mathbb{Z}$  &  $a_n \neq 0$ .

Example (1)  $\sqrt{2}$  is algebraic since it satisfies  $x^2 - 2 = 0$ .

(2)  $\zeta = e^{2\pi i/5} = \cos(\pi/5) + i \sin(\pi/5)$  is algebraic since it satisfies  $z^5 - 1 = 0$ .