

Primes

Let:

$$N = \left[\{1, 3\} \cup \left[\bigcup_{n \in \mathbb{N}} 2n \right] \cup \left[\bigcup_{n \in \mathbb{N}} 3(2n+1) \right] \cup \left[\bigcup_{n \in \mathbb{N}} 5(6n \pm 1) \right] \cup \left[\bigcup_{n \in \mathbb{N}} 7(6n \pm 1) \right] \cup \left[\bigcup_{(6n \pm 1) \in N \setminus 5N \setminus 7N; q \in N \setminus 2N \setminus 3N \setminus 5N \setminus 7N} q(6n \pm 1) \right] \right]$$

Then:

$$\left[\bigcup_{n \in \mathbb{N}; q \in N \setminus 2N \setminus 3N \setminus 5N \setminus 7N} q(6n \pm 1) \right] = \left[\bigcup_{(6n \pm 1) \in N \setminus 5N \setminus 7N; (6n \pm 1) \times (6n \pm 1); q=1} (6n \pm 1) \right] \cup \left[\bigcup_{(6n \pm 1) \in N \setminus 5N \setminus 7N; q \neq 1 \in N \setminus 2N \setminus 3N \setminus 5N \setminus 7N} q(6n \pm 1) \right] =$$

Cause:

$$(6n \pm 1) \neq 5(6m \pm 1) \rightarrow 6n \neq 30m \pm 5 \pm 1$$

$$(30m \pm 5 \pm 1) \neq 6n \rightarrow n \neq 5m \pm (5 \pm 1) * \frac{1}{6} \rightarrow n \neq 5m + 1 \text{ for } (6n - 1); n \neq 5m - 1 \text{ for } (6n + 1)$$

$$(6n \pm 1) \neq 7(6m \pm 1) \rightarrow 6n \neq 42m \pm 7 \pm 1$$

$$(42m \pm 7 \pm 1) \neq 6n \rightarrow n \neq 7m \pm (7 \pm 1) * \frac{1}{6} \rightarrow n \neq 7m + 1 \text{ for } (6n + 1); n \neq 7m - 1 \text{ for } (6n - 1)$$

Let:

$$Q = N \setminus 2N \setminus 3N \setminus 5N \setminus 7N$$

$$Q = \{1\} \cup (P_{\{1\} \setminus \{2,3,5,7\}} \times P_{\{1\} \setminus \{2,3,5,7\}})^N$$

Then:

$$= \left[\bigcup_{(n \neq 7m+1; n \neq 5m-1); n, m \in \mathbb{N}} (6n+1) \right] \cup \left[\bigcup_{(n \neq 7m-1; n \neq 5m+1); n, m \in \mathbb{N}} (6n-1) \right] \cup \left[\bigcup_{(n \neq 7m+1; n \neq 5m-1); n, m \in \mathbb{N}; q \neq 1 \in Q} q(6n+1) \right] \cup \left[\bigcup_{(n \neq 7m-1; n \neq 5m+1); n, m \in \mathbb{N}; q \neq 1 \in Q} q(6n-1) \right]$$

Then:

$$P \subset \left[\bigcup_{(n \neq 7m+1; n \neq 5m-1); n, m \in \mathbb{N}} (6n+1) \right] \cup \left[\bigcup_{(n \neq 7m-1; n \neq 5m+1); n, m \in \mathbb{N}} (6n-1) \right]$$

And:

$$P = \{2, 3, 5, 7\} \cup \left[\{6\} \times \left[\bigcup_{n \in \mathbb{N}} 2^n \right] \times \left[\bigcup_{n \in \mathbb{N}} 3^n \right] \times \left[\bigcup_{p \in [(P \cup \{1\}) \setminus \{2,3,5,7\}]} p \right] \times \left[\bigcup_{q \in [Q \setminus P]} q \right] + 1 \right] \cup \left[\{6 * 5\} \times \left[\bigcup_{q \in [Q \setminus P]} q \right] + 1 \right] \cup \left[\{6 * 7\} \times \left[\bigcup_{q \in [Q \setminus P]} q \right] + 1 \right] \cup \left[\{6\} \times \left[\bigcup_{n \in \mathbb{N} \setminus \{0\}} 2^{2n+1} \right] \times \left[\bigcup_{p \in [(P \cup \{1\}) \setminus \{2,3,5,7\}]} p \right] \times \left[\bigcup_{q \in [Q \setminus P]} q \right] + 1 \right] \cup \left[\{6\} \times \left[\bigcup_{n \in \mathbb{N}} 2^n \right] \times \left[\bigcup_{n \in \mathbb{N} \setminus \{0\}} 3^n \right] \times \left[\bigcup_{p \in [(P \cup \{1\}) \setminus \{2,3,5,7\}]} p \right] \times \left[\bigcup_{q \in [Q \setminus P]} q \right] - 1 \right] \cup \left[\{6\} \times \left[\bigcup_{n \in \mathbb{N} \setminus \{0\}} 2^n \right] \times \left[\bigcup_{n \in \mathbb{N}} 3^n \right] \times \left[\bigcup_{p \in [(P \cup \{1\}) \setminus \{2,3,5,7\}]} p \right] \times \left[\bigcup_{q \in [Q \setminus P]} q \right] - 1 \right]$$