$$3 \longrightarrow 2 \longrightarrow -2 \longrightarrow 4$$
$$\mathbb{N} \qquad 6\mathbb{N} \qquad \mathbb{Z} \qquad \mathbb{N}$$

$$\beta(0,1,2,3,4,\dots) = \begin{pmatrix} 0 & 1 & 0 & -1 & 0 & 1 & -1 & -1 & 1 & 2 \\ 0 & 0 & 1 & 0 & -1 & 1 & 1 & -1 & -1 & 0 \end{pmatrix}$$

$$5 \xrightarrow{\beta} \begin{pmatrix} 1 \\ 1 \end{pmatrix} \xrightarrow{\nu_1} \begin{pmatrix} -1 \\ 1 \end{pmatrix} \xrightarrow{\beta^{-1}} 6$$

$$\begin{pmatrix} 1 \\ 1 \end{pmatrix} \xrightarrow{\nu_2} \begin{pmatrix} 1 \\ -1 \end{pmatrix} \longrightarrow 8$$

$$7 \xrightarrow{\beta} \begin{pmatrix} -1 \\ -1 \end{pmatrix} \xrightarrow{\nu_1} \begin{pmatrix} +1 \\ -1 \end{pmatrix} \longrightarrow 8$$

$$\begin{pmatrix} -1 \\ -1 \end{pmatrix} \xrightarrow{\nu_2} \begin{pmatrix} -1 \\ +1 \end{pmatrix} \longrightarrow 6$$

$$f : (\mathbb{Q}_+, R) \longrightarrow (M^0, G) \subset \mathbb{N}$$
$$p/q \longmapsto 2^p 3^q$$

$$\tilde{f} : (\mathbb{Q}, R) \longrightarrow (\tilde{M}, G) \subset \mathbb{Q}_+$$

(1) $2^a 3^b < 2^p 3^q \Rightarrow a/b < p/q$

M $\qquad$ $\mathbb{Q}_+$

$\tilde{M}$ $\qquad$ $\mathbb{Q}$

(2) $\frac{a}{b} < \frac{p}{q} \Rightarrow 2^a 3^b < 2^p 3^q$

$\tilde{\tilde{f}} \circ \rightrightarrows^2 \xrightarrow{\beta^{-1}} \mathbb{N}$