$f$        least fixed pt

$\alpha \mapsto 1+\alpha$    $\omega$

$\alpha \mapsto \omega+\alpha$    $\omega^2$    $\omega+\omega^2 = \omega(1+\omega) = \omega^2$

$\alpha \mapsto \omega\times\alpha$    $\omega^\omega$    $\omega\times\omega^\omega = \omega^{1+\omega} = \omega^\omega$

$\alpha \mapsto \omega^\alpha$    $\varepsilon_0$    $\omega^{\varepsilon_0} = \varepsilon_0$

$\alpha \mapsto \varepsilon_\alpha = \varphi(1,\alpha)$    $\zeta_0 = \varphi(2,0)$    $\varepsilon_{\zeta_0} = \zeta_0$

$\alpha \mapsto \zeta_\alpha = \varphi(2,\alpha)$    $\eta_0 = \varphi(3,0)$    $\zeta_{\eta_0} = \eta_0$

$\alpha \mapsto \varphi(\alpha,0)$    $\varphi(1,0,0)$

$\omega^2+\omega^3$
$= \omega^2 \cdot$
$\omega^2+\omega^2\cdot 1$
$= \omega^2 \cdot 2$
$\omega^2+\omega^2\cdot 2$
$= \omega^2(1+2) = \omega^2\cdot 3$
$= \omega^2\cdot\omega = \omega^3$

$\Phi$ ( next fixed pt +1

$f$ least fixed pt

$\alpha\mapsto 1+\alpha$   least $\omega+1$, $1+(\omega+1)\ldots = \omega+1$

$\Phi[1+\cdot] = [\omega+\cdot]$

$\alpha\mapsto\omega+\alpha$   lim $\omega^2+1$, $\omega+\omega^2+1, \ldots = \omega^2+1$

$\Phi[\omega+\cdot] = [\omega^2+\cdot] = \Phi(\Phi[1+\cdot])$

$f$ for $\alpha = \omega^2+\alpha$,
$\omega^2+\omega^3 = \omega^3$

$\alpha\mapsto\omega\times\alpha$   lim $\omega^\omega+1$, $\omega(\omega^\omega+1) = \omega^\omega+\omega$
$\omega(\omega^\omega+\omega) = \omega^\omega+\omega^2$
$>\omega^\omega\cdot 2$

$\Phi^3[1+\cdot] = [\omega^3+\cdot]$
$\Phi^\omega[1+\cdot] = [\omega^\omega+\cdot]$

$\Phi[\omega\times\cdot] = [\omega^\omega\times(1+\cdot)]$

$\alpha\mapsto\omega^\alpha$ : lim $\varepsilon_0+1$, $\omega^{\varepsilon_0+1}$, $\omega^{\omega^{\varepsilon_0+1}}$

$= \varepsilon_1$

$\omega^\omega+\alpha = \alpha$

$\Phi[\omega^\cdot] = [\varepsilon_\cdot]$

$\Phi[\varphi(\alpha,\cdot)] = [\varphi(\alpha+1,\cdot)]$

$\Phi[\varphi(\cdot,0)] = [\varphi(1,0,\cdot)]$