Z3

$$F(\alpha)=\alpha \wedge F^{(i)}(\alpha)=0 \wedge F^{(p)}(\alpha)\neq 0$$
$$(1 \leq i \leq p-1)$$

Rozwijam $F(x_n)$ w szereg taylora w punkcie α

$$x_{n+1}=F(x_n)=\underset{=\alpha}{F(\alpha)}+\underbrace{\frac{x_n-\alpha}{1!}F'(\alpha)+\frac{(x_n-\alpha)^2}{2!}F''(\alpha)+\ldots+\frac{(x_n-\alpha)^{p-1}}{(p-1)!}F^{(p-1)}(\alpha)}_{0}+\frac{(x_n-\alpha)^p}{p!}\underset{\neq 0}{F^{(p)}(\alpha)}+\frac{(x_n-\alpha)^{p+1}}{(p+1)!}F^{(p+1)}(\xi)$$
$$\xi \in [x_n, \alpha]$$

$$\lim_{n\to\infty}\left|\frac{x_{n+1}-\alpha}{(x_n-\alpha)^p}\right|=\lim_{n\to\infty}\left|\frac{\alpha-\alpha+\cancel{(x_n-\alpha)^p}\frac{F^{(p)}(\alpha)}{p!}+(x_n-\alpha)^{\cancel{p+1}}\frac{F^{(p+1)}(\xi)}{(p+1)!}}{\cancel{(x_n-\alpha)^p}}\right|=$$

$$=\lim_{n\to\infty}\left|\frac{F^{(p)}(\alpha)}{p!}+\underbrace{(x_n-\alpha)}_{\xrightarrow{n\to\infty}0}\frac{F^{(p+1)}(\xi)}{(p+1)!}\right|=\frac{F^{(p)}(\alpha)}{p!}\neq 0$$

$$\boxed{C=\frac{F^{(p)}(\alpha)}{p!}}$$