$r := x \rightarrow \dfrac{(x+4)^3}{(x-4)^3}$

$$r := x \mapsto \frac{(x+4)^3}{(x-4)^3} \tag{1}$$

$rp := \mathrm{D}(r)$

$$rp := x \mapsto \frac{3 \cdot (x+4)^2}{(x-4)^3} - \frac{3 \cdot (x+4)^3}{(x-4)^4} \tag{2}$$

$rpp := \mathrm{D}(rp)$

$$rpp := x \mapsto \frac{6 \cdot (x+4)}{(x-4)^3} - \frac{18 \cdot (x+4)^2}{(x-4)^4} + \frac{12 \cdot (x+4)^3}{(x-4)^5} \tag{3}$$

$solve(rpp(x) = 0)$

$$-12, -4 \tag{4}$$

$simplify(rpp(x))$

$$\frac{48\,(x+4)\,(x+12)}{(x-4)^5} \tag{5}$$

$simplify(rp(x))$

$$-\frac{24\,(x+4)^2}{(x-4)^4} \tag{6}$$