

$\frac{r f(r) + f(r)}{f(r)} = 1$	$f(r) = 9 \cdot 9 + 1 = 1$ $r f(r) = r$ $f(-1) = 1 + 3 + 1 = 5$ $f(r) = 4 \cdot 4 + 1 = -1$ $f'(r) = 1$	6
$\frac{r f(r) - r f(r)}{f(r)} = \frac{r}{r}$	$f(r) = r \cdot r + 1 = r^2$ $r f(r) = r^3$ $f(-r) = (-r)^2 = r^2$ $r f(-r) = r$ $f(r) = r \cdot r + 1 = r^2$	7
$\frac{f(f(r)) - f(f(r))}{f(r) - r} = 0$	$f(r) = 1$ $f(1) = r$ $f(r) = r$ $f(1) = r$	8
$f(f(\sqrt{r-1})) = \frac{r}{14}$	$f(z) = \frac{z^r + r z + 9}{z^r + r z + 9} \Rightarrow \frac{(\sqrt{r-1})^r + r(\sqrt{r-1}) + 9}{(\sqrt{r-1})^r + r(\sqrt{r-1}) + 9} = \frac{r + r - r\sqrt{r-1} + r\sqrt{r-1} - 1 + 9}{r + r - r\sqrt{r-1} + r\sqrt{r-1} - 1 + 9} = \frac{8}{r} = r$ $f(r) = \frac{r + 1 + 9}{r + 1 + 9} = \left\{ \frac{r}{14} \right\}$	9
$(f(\sqrt{x}))^r - f(x) = x^{\frac{r}{2}} + \frac{1}{x^r} + r - x^{\frac{r}{2}} - \frac{1}{x^r} = 1$	$f(x) = x^r + \frac{1}{x^r} \Rightarrow f(\sqrt{x}) = (\sqrt{x})^r + \frac{1}{(\sqrt{x})^r} = x + \frac{1}{x}$ $(f(\sqrt{x}))^r = \left(x + \frac{1}{x}\right)^r = x^r + \frac{1}{x^r} + r$	10