



|                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                       |    |
|-----------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|
| $f(x) = x^r - \frac{1}{2}x + 1$<br>$\frac{rf(x) + f(-1)}{f'(r)} = ?$                                      | $f(r) = r^r - \frac{1}{2}r + 1 = 9 - 4.5 + 1 = 1$<br>$f(-1) = (-1)^r - \frac{1}{2}(-1) + 1 = 1 + 0.5 + 1 = 2.5$<br>$f'(r) = r^r - \frac{1}{2}r + 1 = 1 - 4.5 + 1 = -2.5$<br>$\rightarrow \frac{rf(x) + f(-1)}{f'(r)} = \frac{r(1) + 2.5}{(-1)^r} = \frac{r + 2.5}{1} = \boxed{V}$                                                                                                                     | 6  |
| $f(x) = \begin{cases} r_{x+1} & x \geq r \\ x^r & x < r \end{cases}$<br>$\frac{rf(r) - rf(-r)}{f(r)} = ?$ | $f(r) = r(r) + 1 = 1^r$<br>$f(-r) = (-r)^r = r^r$<br>$f'(r) = r(r) + 1 = V$<br>$\rightarrow \frac{rf(r) - rf(-r)}{f(r)} = \frac{r(1^r) - r(r^r)}{V} = \frac{r - r^r}{V} = \frac{r - 1}{V} = \boxed{\frac{r}{V}}$                                                                                                                                                                                      | V  |
| $f = \{(r, 4), (r, 2), (1, 1), (1, 4)\}$<br>$\frac{f(f(r)) - f(f(r))}{f(1) - r} = ?$                      | $f(r) = 1 \rightarrow f(1) = 4$<br>$f(r) = 2 \rightarrow f(2) = 4$<br>$\rightarrow \frac{f(f(r)) - f(f(r))}{f(1) - r} = \frac{f(1) - f(2)}{4 - r} = \frac{4 - 4}{4 - r} = \frac{0}{f} = \boxed{0}$                                                                                                                                                                                                    | Λ  |
| $f(x) = \frac{x^r + 9}{x^r + 9}$<br>$f(f(\sqrt{r-1})) = ?$                                                | <p>if <math>x = \sqrt{r-1} \Rightarrow x+r = \sqrt{r}</math></p> <p><math>\Rightarrow x^r + 9 = (x+r)^r + 9 \Rightarrow (\sqrt{r})^r + 9 = 1 + 9 = 10</math></p> <p><math>\Rightarrow x^r + 9 = (x+r)^r + 1 \Rightarrow (\sqrt{r})^r + 1 = r + 1 = f</math></p> <p><math>\rightarrow f(r) = \frac{(r)^r + f(r) + 9}{(r)^r + f(r) + 9} = \frac{f + 1 + 9}{f + 1 + 9} = \boxed{\frac{r}{14}}</math></p> | 9  |
| $f(x) = x^r + \frac{1}{x^r}$<br>$(f(\sqrt{x}))^r - f(x) = ?$                                              | $f(\sqrt{x}) = (\sqrt{x})^r + \frac{1}{(\sqrt{x})^r} = x + \frac{1}{x}$<br>$\downarrow$<br>$(f(\sqrt{x}))^r - f(x) = ?$<br>$\downarrow$<br>$(x + \frac{1}{x})^r - (x^r + \frac{1}{x^r}) = x^r + \frac{1}{x^r} - x^r - \frac{1}{x^r} = \boxed{r}$                                                                                                                                                      | 1. |