

$$f(x) = \frac{x^r + rx + \omega}{x^r + rx + r} \Rightarrow \frac{(x+r)^r + 1}{(x+r)^r + r} \Rightarrow f(\sqrt{r}-r) \Rightarrow \frac{(\sqrt{r}-r+r)^r + 1}{(\sqrt{r}-r+r)^r + r} = \frac{r}{r}$$

$$= \frac{r}{r}$$

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$$f\left(x - \frac{1}{x}\right) = \frac{x^{r+1}}{x^r}$$

$$\Rightarrow \left(x - \frac{1}{x}\right)^r = x^r + \frac{1}{x^r} - r \Rightarrow \left[\frac{x^{r+1}}{x^r} - r\right] + r \Rightarrow f(x) = x^r + r$$

$$f(-r) \Rightarrow (-r)^r + r = 11$$

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$$f(x) = \{(1,0), (1,-r), (0,r), (r,1)\}$$

$$g(x) = \sqrt{9-x^2} \Rightarrow \sqrt{(r+x)(r-x)} \quad \frac{-r}{-r+r} = \frac{r}{r} \quad \text{DF} = [-r, r] \quad \text{DF} \cap \text{Dg} = \{0, 1, r\}$$

$$\text{الف) } \frac{f}{g} = \left\{(0, \frac{r}{r}), (1, \frac{-r}{\sqrt{r}}), (r, \frac{0}{\sqrt{0}})\right\}$$

$$g(0) = \sqrt{9-0} = 3 \quad g(1) = \sqrt{9-1} = \sqrt{8} \quad g(r) = \sqrt{9-r^2}$$

$$\text{ب) } \frac{g}{f} = \left\{(0, \frac{3}{r}), (1, \frac{\sqrt{8}}{-r}), (r, \frac{\sqrt{0}}{r})\right\} \Rightarrow \left\{(0, \frac{3}{r}), (1, \frac{\sqrt{8}}{-r})\right\}$$

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$$f(x) = \{(1,1), (3,4), (-5,2), (1,-2)\}$$

$$\text{الف) } rf(x) \Rightarrow \{(1,2), (3,8), (-5,4), (1,-4)\}$$

$$\text{ب) } f(x)+1 \Rightarrow \{(1,2), (3,5), (-5,3), (1,-1)\}$$

$$\text{ج) } rf^2(x)+1 \Rightarrow \{(1,4), (3,19), (-5,13), (1,13)\}$$

$$\text{د) } f(rx) \Rightarrow \{(1,1), (\frac{3}{r}, 4), (-\frac{5}{r}, 2), (\frac{1}{r}, -2)\}$$

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$$f(x) = \{(1,3), (1,2), (1,4), (3,1), (5,2)\}$$

$$g(x) = \{(1,0), (1,1), (-1,4), (-2,3), (3,-1)\}$$

$$\text{الف) } f-g = \{(1,4), (1,1), (3,2)\}$$

$$f \cdot g = \{(1,0), (1,2), (1,-1)\}$$

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$$\text{ب) } \frac{rf}{g} = \frac{rf}{g} = \left\{(1,4), (1,2), (3,2), (5,4)\right\}$$

$$\frac{rf}{g} = \left\{(1, \frac{4}{0}), (1, \frac{2}{1}), (3, \frac{2}{-1})\right\} \Rightarrow \left\{(1, \frac{4}{0}), (3, \frac{2}{-1})\right\}$$