

$$y = \sqrt{x(f(x))} \rightarrow x f(x) \geq 0$$

$$Df = [-A, 0] \cup [r, A]$$

	-A	0	r	A
f(x)	+	0	-	0
x	-	-	+	+
	-	+	-	+

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$$y = \sqrt{\frac{-x}{f(x)}} \quad \frac{-x}{f(x)} \geq 0$$

$$-x, r, 0, A$$

	-r	0	r	A
f(x)	-	0	+	0
-x	+	+	-	-
	-	+	-	-

$$\{-r, -1, 1\}$$

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$$Df = (-r, r) - \{0\}$$

$$f(x) - r f(r) = x^r - r x + r^2 \quad f(r) - r f(r) = r^r - r + r$$

$$f(-r) - r f(r) = r^r + r + r$$

$$-f(r) = +r$$

$$f(-r) - r f(r) = 1^r \rightarrow f(-r) + r = 1^r$$

$$f(r) = -r$$

$$f(-r) = 1$$

$$f(f(A)) + f(f(r)) \quad f(A) = A - \sqrt{r} = r$$

$$f(r) + f(A) \quad f(r) = A$$

$$= r + r = 2r$$

$$f(r) = r$$

$$f(x) = ax^r + bx + r \quad f(x-1) - f(x) = 4x + r$$

$$f(x-1) = a(x-1)^r + b(x-1) + r$$

$$a x^r + a - r a x + b x - r = 4x + r$$

$$a + b - r a x = 4x + r$$

$$f(x-1) = a x^r + a - r a x - b x + b + r$$

$$-r a x = 4x \quad a + b = r$$

$$a - b = -1$$

$$\begin{cases} a = 5 \\ a = -r \end{cases}$$

$$\begin{cases} -r + b = r \\ b = 4 \end{cases}$$

$$f(x) = \frac{x^r + 4x + 4}{x^r + 4x + 4} = \frac{x^r + 4x + 4 + 1}{x^r + 4x + 4 + 3} = \frac{(x+2)^r + 1}{(x+2)^r + 3} \xrightarrow{x=\sqrt{r}-2} \frac{(\sqrt{r}-2+2)^r + 1}{(\sqrt{r}-2+2)^r + 3} = \frac{r}{4} = \frac{r}{4}$$

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

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

$$f(x - \frac{1}{x}) = (x - \frac{1}{x})^r + 2 \implies f(-r) = (-r)^r + 2 \implies f(-r) = 1$$

$$D_f = \{x, 1, 0, 7\} \quad , \quad D_g = [-2, 3] \Rightarrow \frac{1-x^2}{(x-1)(x+1)} = \frac{-1}{x+1}$$

$$D_f \cap D_g = \{0, 1, 2\} \quad D\left(\frac{f}{g}\right) = \{0, 1, 2\} - \{-2, 3\} = \{0, 1, 2\} \quad , \quad D\left(\frac{g}{f}\right) = \{-2, 3\} - \{0, 1, 2\} = \{-2\}$$

$$a) \frac{f}{g} = \left\{ \left(0, \frac{2}{-1}\right), \left(1, \frac{1}{-2}\right), \left(2, \frac{0}{-3}\right) \right\}$$

$$b) \frac{g}{f} = \left\{ \left(0, \frac{2}{0}\right), \left(1, \frac{1}{1}\right) \right\}$$

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

$$a) 2f(x) = \{(2, 2), (3, 8), (-5, 4), (1, -4)\}$$

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

$$c) 2f(x) + 1 = \{(2, 5), (3, 9), (-5, 7), (1, 1)\}$$

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

$$f(x) = \{(2, 3), (7, 2), (1, 4), (3, 1), (5, 2)\}$$

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

$$D_f \cap D_g = \{1, 2, 3\} \quad D_{f-g} = \{1, 2, 3\} \quad D_{\frac{f}{g}} = \{1, 2, 3\} - \{1\} = \{2, 3\}$$

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

$$b) \frac{f}{g} = \{(2, 3), (3, 2)\}$$