

آزمایش‌های عالی در کتاب درسیا

آزمون ریاضی یازدهم بنویسید و حل کنید

$a=1, b=2, c=-2$

(1) $\sqrt{x-2}\sqrt{x-2} + \sqrt{x+2}\sqrt{x-2}$

$\sqrt{x-2}\sqrt{x-2} + \sqrt{x+2}\sqrt{x-2} = \sqrt{(x-2)^2} + \sqrt{(x-2)(x+2)} = \sqrt{x-2} - 2 + \sqrt{x-2} = 2\sqrt{x-2}$

(2) $f(x) = x^2(1-\frac{1}{x}) \rightarrow (1, x) \text{ و } (1, \frac{1}{x}) \rightarrow \frac{1}{x} = (1, \frac{1}{x}) \text{ و } (0, 1)$

(3) $f(x) = (1, x) \text{ و } (1, \frac{1}{x}) \text{ و } (0, 1)$
 $f(x^2) = (1, x^2) \text{ و } (1, \frac{1}{x^2}) \text{ و } (0, 1)$
 $g(x) = (1, x) \text{ و } (1, \frac{1}{x}) \text{ و } (0, 1)$

(3) $\frac{f}{g} = (1, x) \text{ و } (1, \frac{1}{x}) \text{ و } (0, 1)$
 $g = (1, x) \text{ و } (1, \frac{1}{x}) \text{ و } (0, 1)$

(4) $h = f + g = (1, x) \text{ و } (1, \frac{1}{x}) \text{ و } (0, 1)$

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(5) $g(x) = [x] + [-x] \rightarrow x \in \mathbb{Z} = 0$
 $1 \rightarrow x \notin \mathbb{Z} = -1$
 $\sqrt{x} \geq x \rightarrow x(x-1) \leq 0$
 $0 \leq x \leq 1$

(6) $h(x) = \frac{f(x)}{g(x)}$
 $f(x) = (1, x) \text{ و } (1, \frac{1}{x}) \text{ و } (0, 1)$
 $g(x) = (1, x) \text{ و } (1, \frac{1}{x}) \text{ و } (0, 1)$
 $h(x) = (1, x) \text{ و } (1, \frac{1}{x}) \text{ و } (0, 1)$

(7) $y = x^3 - 2x^2 + 1 \rightarrow y = (x-1)^3 + 1$
 $x = \sqrt[3]{y-1} + 1$
 $y^3 - 2y^2 + 1 = 0$
 $y^2(y-2) + 1 = 0$
 $y^2(y-2) \geq -1$
 $y \in (-\infty, -1] \cup (0, +\infty)$

(8) $y = x^3 - 2x + 10 \rightarrow x^3 = 2x - 9$
 $y = 2x - 9$
 $x^3 = 2x - 9$
 $x^3 - 2x + 9 = 0$
 $x(x^2 - 2) + 9 = 0$
 $x \in (-\infty, -3] \cup [1, +\infty)$

(9) $R_f = \mathbb{R}$
 $R_g = [0, +\infty)$
 $R_h = [0, +\infty)$

(10) $R_f = \mathbb{R} - \{1\}$
 $R_g = \mathbb{R} - \{1\}$