

الف) $f(x) = \sqrt{x|x|}$ $\checkmark$ $\textcircled{1}$ $g(x) = \frac{\sqrt{\sin x} - \sqrt{\sin x}}{\sqrt{\sin x}(\sqrt{\sin x} - \sqrt{\sin x})}$ $\sqrt{\sin x}$
 $x|x| \geq 0 \rightarrow \checkmark$ $\textcircled{2}$ $\frac{\sqrt{\sin x}(\sqrt{\sin x} - \sqrt{\sin x})}{\sqrt{\sin x}(\sqrt{\sin x} - \sqrt{\sin x})}$ $\sqrt{\sin x}$

ب) $(x+2)(x+1) + x + 5$
 $\frac{x^2 + 3x + 2 + x + 5}{x^2 + 4x + 7}$ $\Delta = b^2 - 4ac$
 $\Delta > 0 \rightarrow x \times$ $40 - 28 = 12$
 $\Delta = 16 - 28 = -12$
 $\frac{x}{|x|} \rightarrow |x| \neq 0 \quad x \neq 0$

الف) $f(x) = \left[\frac{x}{1+x} \right]$, $g(x) = [x - [x]]$ $\textcircled{1}$ $\checkmark$ $\textcircled{2}$ $\checkmark$
 $\frac{1}{1+1} = \left[\frac{1}{2} \right]$ $1-1=0$ $\frac{1}{2} = \left[\frac{1}{2} \right] = 0$ $\textcircled{3}$ $\checkmark$ $\textcircled{4}$ $\checkmark$
 $\left[\frac{1}{2} - \left[\frac{1}{2} \right] \right] = 0$ $\left[\frac{1}{2} - \left[\frac{1}{2} \right] \right] = 0$ $\left[\frac{1}{2} - \left[\frac{1}{2} \right] \right] = 0$ $\left[\frac{1}{2} - \left[\frac{1}{2} \right] \right] = 0$

ب) $f(x) = \frac{1}{1+x}$, $g(x) = \frac{1}{1+x} \rightarrow x = \frac{1}{1+x}$ $\frac{1}{1+x} = \frac{1}{1+x}$
 $\frac{1}{1+x} = \frac{1}{1+x}$ $\frac{1}{1+x} = \frac{1}{1+x}$ $\frac{1}{1+x} = \frac{1}{1+x}$

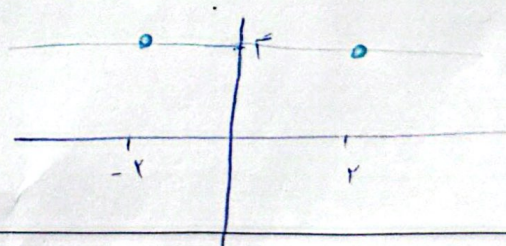
$f(x) + g(x) = x^2 + x + 1 \rightarrow f(x) - g(x) = x^2 - x + 1$
 $f(x) + g(x) = x^2 + x + 1$ $f(x) - g(x) = x^2 - x + 1$
 $2x^2 + 2x + 2 = 2x^2 + 2 \rightarrow f(x) = x^2 + 1$

$f(x) - g(x) = x^2 - x + 1$
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$x + \sqrt{x^2 - 1} \rightarrow x^2 - 1 \geq 0 \rightarrow x^2 \geq 1 \rightarrow x \geq 1$

$x \leq -1 \rightarrow (-\infty, -1] \cup [1, +\infty)$

$x^2 - |x^2 - 1| = 1$



$(a+b)(a-b) \rightarrow a^2 - b^2$

$f(x) = \frac{ax+y}{x^2+mx+n}$ / $g(x) = \frac{x-b}{x^2+mx+n}$ $am - bn = 1$

$(x-a)(x+b) = x^2 + bx - ax - ab = x^2 + (b-a)x - ab$
 $x^2 + (b-a)x - ab = x^2 + mx + n \rightarrow m = b-a, n = -ab$

$\rightarrow |b-a| = 1, n = -ab$

$$a \cdot d = -1$$

$$r(a - r b) = 1 \rightarrow -r - r b = 1 \rightarrow b = -r$$

$$a - r b = c$$

$$a = -1$$

$$r c = 0$$

$$d + c = -1 + 0 = -1$$

$$t = 2 \rightarrow b$$

$$(rx + a) / (x^2 + 9x + b)$$

$$(rx + a)(x - c) = rx^2 - r c x + ax - ac = rx^2 + x(a - r c) - ac$$

$$rx^2 + x(a - r c) - ac = rx^2 + 12x + 9$$

$$a^2, r = 1$$

$$-(12 + r c) c = 9$$

$$-12c - r c^2 = 9$$

$$b = -4c - c^2$$

$$c = -3$$

$$a = 12 + r(-3) = 12 - 9 = 3$$

$$b = 1(-3) - (-3)^2 = 12 - 9 = 9$$

$$a + 1 + c = 3 + 9 + (-3) = 12$$

$$a + b + c = 12$$