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1) $\boxed{B}$

2) $\boxed{C}$

3) $(-1, -7), (0, 5), (5, 0), (8, -2) \boxed{A}$

4) $(-1, -3), (5, -2), (5, 0), (9, 2), (2, 4) \boxed{C}$

5) $y = |x| \boxed{A}$

6) $f(-1) = x^2 + 2x + 5 \quad \boxed{A}$
$$\begin{array}{r} (-1)^2 + 2(-1) + 5 \\ 1 - 2 + 5 \\ 1 - 2 \\ -1 + 5 \\ \hline 4 \end{array}$$

7) $f(2)$ when $f(x) = \frac{x^2 - 4}{x + 1} \quad \boxed{A}$
$$\frac{2^2 - 4}{2 + 1} = \frac{4 - 4}{3} = \frac{0}{3} = 0$$

8) $f(-9)$ when $f(x) = |x| - 6 \quad \boxed{B}$
$$\frac{|-9| - 6}{3} = \frac{9 - 6}{3} = \frac{3}{3} = 1$$

9) $f(x) = 2 - 7x; g(x) = -5x + 7 \quad \boxed{B}$

$$(2 - 7x) + (-5x + 7)$$

$9 - 12x$

10) $f(x) = 8x - 2$; $g(x) = 4x + 8$ [A]

Find $f - g$
 $(8x - 2) - (4x + 8)$
 $4x - 10$

11) $f(x) = 2x + 2$; $g(x) = 5x - 1$ [D]

Find $f \cdot g$
 $(2x + 2)(5x - 1)$
 $10x^2 + 2x + 10x - 2$
 $10x^2 + 12x - 2$

12) $f(x) = 5x + 1$; $g(x) = 3x - 5$

Find $\frac{f}{g}$
 $\frac{5x + 1}{3x - 5}$

13) [A]

14) [A]

15) [C]

6) $f(x) = \sqrt{x + 2}$, $g(x) = 2x$ $(f \circ g)(1)$ $f(g(x))$ [B]

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

$= \sqrt{2(1)(1 + 2)}$

$= \sqrt{(2)(3)}$

$= \sqrt{6}$

17) $f(x) = 4x + 4$, $g(x) = 4x^2 + 3$ (f of g)(2) C

$f[f(x)]$	$16(2) + 20$	$4(4(2) + 4) + 4$
$4(4x + 4) + 4$	$32 + 20$	$4(8 + 4) + 4$
$16x + 16 + 4$	52	$(32 + 16)$
$16x + 20$		$48 + 4$
		52

18) $f(x) = 4x + 6$, $g(x) = 4x^2 + 1$; Find (Fog)(4) $f(g(x))$ A

~~$4(4x^2 + 1) + (x + 6)$~~ ~~$4(4(4)^2 + 1) + (x + 6)$~~

~~$16x^2 + 4 + x + 6$~~ ~~$16(16) + 4 + x + 6$~~

~~$16x^2 + x + 10$~~ ~~$256 + 4 + x + 6$~~

$4(4(4)^2 + 1) + (x + 6)$	$4(4x^2 + 1) + 6$
$4(16)$	$4(1(4)^2 + 1) + 6$
$4(64 + 1) + (x + 6)$	$4(4(16) + 1) + 6$
$256 + 4$	$4(64 + 1) + 6$
$257 + 10$	$256 + 4 + 6$
267	$260 + 6$
	266

$f(x) = 17x - 10$ (f of g)(17) $f(g(x))$

f(g(x))

$$7(17x-10)^2 + 7x$$

$$(17x-10)(17x-10)$$

$$7(289x^2 - 340x + 100) + 7x$$

$$7(289(12)^2 - 340(12) + 100) + 7x$$

$$7(289(144) - 340(12) + 100)$$

$$7(41,616 - 4,080 + 100)$$

19) C

20) $f(x) = 5x+5$, $g(x) = -1/x$ $g \circ f(3)$ $g(f(x))$ [A]

$$\frac{-1}{(5x+5)} \cdot \frac{x}{1} \quad \frac{-x}{(5x+5)} \quad \frac{-3}{(5(3)+5)} \quad \frac{-3}{(15+5)} \quad \frac{-3}{20}$$

(1) $\frac{-1}{(5x+5)} + \frac{x}{1} \frac{(5x+5)}{(5x+5)}$
 (i) $\frac{-1}{(5x+5)} + \frac{x}{1} \frac{(5x+5)}{(5x+5)}$

$$\frac{(1)(-1) + 5x^2 + 5x}{(1)(5x+5)}$$

$$\frac{-1 + 5x^2 + 5x}{(5x+5)}$$

$$\frac{-1 + 5(3)^2 + 5(3)}{(5(3)+5)}$$

$$\frac{-1 + 5(9) + 15}{(15+5)}$$

$$\frac{-1 + 15 + 15}{(20)} = \frac{29}{20}$$

$$-1 \left(\frac{5x+5}{1} \right) + x$$

$$\frac{-1}{3} \frac{(5x+5)}{1} \quad \frac{-5(3)-5}{3} \quad \frac{-15-5}{3} \quad \frac{-20}{3}$$

$$\frac{-1}{x} \frac{(5x+5)}{1} = \frac{-1(5(3)+5)}{3} \quad \frac{-1(15+5)}{3} \quad \frac{-15-5}{3}$$

$$21) f(x) = x^3 - 3$$

[B]

$$\begin{array}{rcl} y & = & x^3 - 3 \\ x^3 & = & y + 3 \\ +3 & +3 & \\ y & = & x^3 + 3 \\ y & = & \sqrt[3]{x^3 + 3} \\ y & = & \end{array}$$

$$22) f(x) = \frac{7x+5}{8}$$

$$y = \frac{7x+5}{8}$$

[D]

$$8 \cdot x = \frac{7y+5}{8} \cdot 8$$

$$x = \frac{7x+5}{8}$$

$$x(8) = 7y+5$$

$$8 \cdot x = 7x+5$$

$$\frac{8x-5}{7} = \frac{7y}{7}$$

$$\begin{array}{r} 8x = 7y+5 \\ -7y \quad -7y \\ \hline -7y = 8x+5 \\ -7 \quad -7 \end{array}$$

$$\begin{array}{r} x(8) = 7x+5 \\ 8x = 7x+5 \\ -5 \quad -5 \\ \hline 8x-5 = 7y \end{array}$$

$$\frac{8x-5}{7} = y$$

$$23) f(x) = \frac{4}{7x+3}$$

[C]

$$x = \frac{4}{7x+3}$$

$$y = \frac{4}{7x+3} \quad 7y+3x = \frac{4}{7x+3} \cdot 7x+3$$

$$(x) 7y+3x = 4$$

$$\begin{array}{r} 7xy+3x = 4 \\ -3x \quad -3x \\ \hline 7xy = -3x+4 \end{array}$$

$$\frac{7xy}{7x} = \frac{-3x+4}{7x}$$

$$y = \frac{-3x+4}{7x}$$

$$24) \frac{7}{x+7} \quad y = \frac{7}{x+7} \quad x = \frac{7}{y+7} \quad \boxed{D}$$

$$(y+5) x = \frac{7}{y+5} \cdot y+5 \quad y+7, x = \frac{7}{y+7} \cdot y+7$$

$$\begin{array}{r} x(y+5) = 7 \\ xy + 5x = 7 \\ -5x \quad -5x \\ \hline xy = 7 - 5x \\ x \quad x \\ y = \frac{7-5x}{x} \end{array}$$

$$\begin{array}{r} x(y+7) = 7 \\ xy + 7x = 7 \\ -7x \quad -7x \\ \hline xy = 0 \\ \hline xy = 0 \end{array}$$

$$\begin{array}{r} xy + 7x = 7 \\ (x+7)y = 7 \\ y = \frac{7}{x+7} \end{array}$$

$$\begin{array}{r} xy + 7x = 7 \\ (x+7)X(y+7) = y \end{array}$$

$$Xy = \frac{7}{y+7} \quad y+7, x = \frac{7}{y+7} \cdot y+7 \quad \boxed{D}$$

$$\begin{array}{r} (y+7)x = 7 \\ xy + 7x = 7 \\ -7x \quad -7x \\ \hline xy = 7 - 7x \\ x \quad x \end{array}$$

$$25) f(x) = (x-5)^3 \quad \boxed{C}$$

$$f^{-1}(x) = \sqrt[3]{x} + 5$$