1

[1] Domain

(A) $f(x) = \sqrt{|x|}$

$\Rightarrow (-\infty, \infty)$

(B) $g(x) = \frac{x}{|x|}$

$\Rightarrow (-\infty, 0) \cup (0, \infty)$

(C) $h(x) = \frac{x+3}{4-\sqrt{x^2-9}}$

$\Rightarrow (-\infty, -5) \cup (-5, -3] \cup [3, 5) \cup (5, \infty)$

(D) $n(x) = \log_2(2x+1)$

$\Rightarrow (-\frac{1}{2}, \infty)$

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[2] Range

(A) $y = 1 - 2x - x^2$

$\Rightarrow (-\infty, 2]$

(B) $y = \frac{1}{x-1}$

$\Rightarrow (-\infty, 0) \cup (0, \infty)$

(C) $y = 1 - (0.1^x)$

$\Rightarrow (-\infty, 1)$

2

[4] ① $f(g(0))=??$

$g(0)=-1 \Rightarrow f(g(0)) = f(-1) = 3$

② $g(f(0))=??$

$f(0)=2 \Rightarrow g(f(0)) = g(2) = 1$

③ $g(g(-1))=??$

$g(-1)=1 \Rightarrow g(g(-1)) = g(1) = 0$

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[5] A $\lim_{x\to 1^-}\left(\frac{1}{x+1}\right)\left(\frac{x+6}{x}\right)\left(\frac{3-x}{7}\right)$

$= 1$

B $\lim_{h\to 0^+}\frac{\sqrt{h^2+4h+5}-\sqrt{5}}{h} = 2/\sqrt{5}$

C $\lim_{x\to 1^+}\frac{\sqrt{2x}(x-1)}{|x-1|} = \sqrt{2}$

(D) $\lim_{y \to 0} \frac{\sin(3y)\cos(5y)}{y\cos(4y)} = 3$

(E) $\lim_{x \to 0^-} \frac{1}{3x} = -\infty$

(F) $\lim_{x \to \infty} \frac{7x^3}{x^3 - 3x^2 + 6x} = 7$

(G) $\lim_{x \to 0} \frac{-1}{x^2(x+1)} = -\infty$

(H) $\lim_{x \to -\infty} \left(\frac{1-x^3}{x^2+7x}\right)^5 = \infty$

(I) $\lim_{x \to -\infty} \frac{4-3x^3}{\sqrt{x^6+9}} = 3$

3

6 (A) $f(x) = \frac{x^3 - 2}{|x|^3 + 1}$

Vertical asymptote $\Rightarrow |x|^3 + 1 = 0$

No solution for $x \in R$

Horizontal asymptote $\Rightarrow \lim_{x \to \infty} \frac{x^3 - 2}{|x|^3 + 1} = 1$

$y = 1$

B) $f(x) = \dfrac{x^3+x+1}{x^2+x-1}$

There is no horizontal asymptote because the degree of denominator is less than the degree of the numerator,

$\boxed{y=0}$ #

4

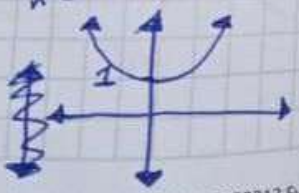
3) graph :

A) $y = -x^3$

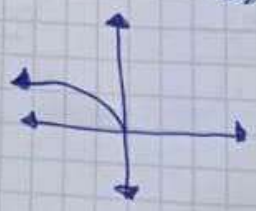
(odd)

B) $y = \frac{1}{x^2}$

(even)



C) $\sqrt{-x}$ =



D) $-4\sqrt{x}$ =

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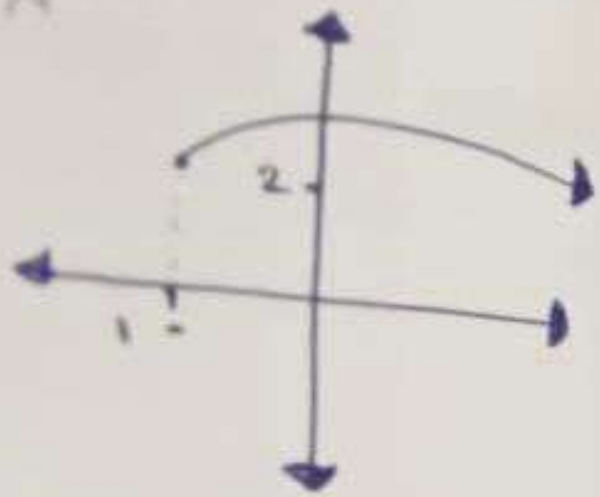
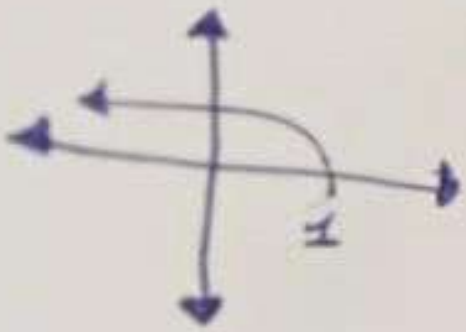
3) E) $y = \frac{x+1}{2}$



F) $\ln(1-x)$