Name_____

2022 Honors Calculus Summer Packet

1). If $f(x) = x^3 - 2x - 1$, then $f(-2)$ is:

A. -17 B. -13 C. -5 D. -1 E. 3 1). _____

2). The domain of $g(x) = \frac{\sqrt{x-2}}{x^2-x}$ is:

A. All $x \neq 0$ or 1 B. $x \leq 2,\ x \neq 0$ or 1
C. All $x \leq 2$ D. $x \geq 2$ E. $x > 2$ 2). _____

3). The domain of $f(x) = \frac{x-1}{x^2+1}$ is:

A. All $x \neq 1$ B. All $x \neq -1$ or 1
C. All $x \neq -1$ D. $x \geq 1$ E. all reals 3). _____

4). If $f(x) = x^3 - 3x^2 - 2x + 5$ and $g(x) = 2$ then $g(f(x)) =$

A. $2x^3 - 6x^2 - 4x + 10$ B. $2x^2 - 6x + 1$
C. -6 D. -3 E. 2 4). _____

5). Write $f(g(x))$ for #4 _____

6). Which of the following has symmetry to the origin (odd)

A. $\frac{x-1}{x}$ B. $2x^4 + 1$ C. $x^3 + 2x$
D. $x^3 + 2$ E. $\frac{x}{x^3+1}$ 6). _____

7). Which of the following functions is NOT ODD

A. $f(x) = \sin x$ B. $f(x) = \sin 2x$
C. $f(x) = x^3 + 1$ D. $f(x) = \frac{x}{x^2+1}$ E. $f(x) = \sqrt[3]{2x}$ 7). _____

8). The set of zeros of $f(x) = x^3 + 4x^2 + 4x$ is $x =$

A. -2 B. $0, -2$ C. $0, 2$ D. $0, -2, 2$ E. $-2, 2$ 8). _____

9). Let $f(x)$ have an inverse function. Then $f(g(x))$ is

A. 1 B. x C. $\frac{1}{x}$ D. $f(x) \cdot g(x)$ E. not enough information 9). _____

10). The period of $f(x) = \frac{2\pi}{3}x$ is

A. $\frac{1}{3}$ B. $\frac{2}{3}$ C. $\frac{3}{2}$ D. 3 E. 6 10). _____

11). $log_b(3b) = \frac{b}{2}$ then $b =$

A. $\frac{1}{9}$ B. $\frac{1}{3}$ C. $\frac{1}{2}$ D. 3 E. 9 11). _____

12). $tan(cos^{-1}(-\frac{\sqrt{2}}{2})) =$

A. -1 B. $-\frac{\sqrt{3}}{3}$ C. $-\frac{1}{2}$ D. $\frac{\sqrt{3}}{3}$ E. 1 12). _____

Write the inverse for the following functions.

13). $f(x) = x^3 + 2$

14). $f(x) = 2e^{-x}$

Given $f(x) = \ln x$ **and** $g(x) = 9 - x^2$

15). Write the domain of $f(x)$

16). Write the range of $f(x)$

17). Write the domain of $g(x)$

18). Write the range of $g(x)$

19). Write the domain of $f(g(x))$

20). Write the range of $f(g(x))$

Given $y = \frac{x-2}{x^2+4}$

21). List all of the asymptotes (horizontal and vertical)

22). Write the domain

23). Write the range

27). Given $log\ 2 = .3010$ $log\ 3 = .4771$ and $log\ 5 = .6990$ Find: *no calculator

A. $log\ 10$
B. $log\ 12$
C. $log\ 150$
D. $log\ 1.5$
E. $log\ 2.5$
F. $log\ 5000$

28). Circle all true statements.

A. $log\ 49 = 2\ log\ 7$
B. $tan\ \frac{\pi}{6} = \sqrt{3}$
C. $sin^2 x + cos^2 x = 1$
D. Even functions have symmetry to the y-axis
E. $cos^{-1}(-\frac{\sqrt{2}}{2}) = \frac{3\pi}{4}$
F. $\sqrt[3]{x-2} = (x-2)^{1/3}$