Name:
Teacher:
Period:
Due Date:

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NEWT Calculus
Summer Homework
Quiz #3

21.) If $p(x) = (x+2)(x+k)$ and if the remainder is 12 when $p(x)$ is divided by $x-1$, then k =?

a. 2
b. 3
c. 6
d. 11
e. 13

22.) If $f(x) = \frac{4}{x-1}$ and $g(x) = 2x$, then the solution set of $f(g(x)) = g(f(x))$ is:

a. $\left\{\frac{1}{3}\right\}$
b. $\{2\}$
c. $\{3\}$
d. $\{-1,2\}$
e. $\left\{\frac{1}{3}, 2\right\}$

23.) If the function f is defined by $f(x) = x^5 - 1$, then f^{-1}, the inverse function of f, is defined by $f^{-1}(x)$ =?

a. $\frac{1}{\sqrt[5]{x}+1}$
b. $\frac{1}{\sqrt[5]{x+1}}$
c. $\sqrt[5]{x-1}$
d. $\sqrt[5]{x}-1$
e. $\sqrt[5]{x+1}$

24.) For $f(x) = ax^7 + bx^5 + cx^3 + dx + e$, where a, b, c, d, and e are real numbers, and $a \neq 0$, then which of the following MUST be true about the equation $f(x) = 0$?

a. The equation has only one real solution.
b. The equation has at least one real solution.
c. The equation has an odd number of non-real solutions.
d. The equation has no real roots
e. The equation has no positive roots.

25.) Which of the following statements are true when a and b are nonnegative real numbers?

I. $\sqrt{a+b} = \sqrt{a} + \sqrt{b}$
II. $\sqrt{(a+b)^2} = |a+b|$
III. $\frac{a-b}{\sqrt{a}+\sqrt{b}} = \sqrt{a} - \sqrt{b}$

a. I only
b. II only
c. III only
d. I and II only
e. II and III only

26.) What is the real value of x in the equation:

$$\log_2 24 - \log_2 3 = \log_5 x \,?$$

a. 3
b. 21
c. 72
d. 125
e. 243

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27.) Where w is an integer greater than 1, which of the following represents the value of x in the following equation?

$$\log_2 x = \log_w w^6 - \log_w w^2$$

a. 16
b. 8
c. 4
d. 2
e. 1

28.) The set of all points (e^t, t),. Where t is a real number, is the graph of $y =$?

a. $\frac{1}{e^x}$
b. $e^{\frac{1}{x}}$
c. $xe^{\frac{1}{x}}$
d. $\frac{1}{\ln x}$
e. $\ln x$

29.) Which of the following is equivalent to the expression:

$$\frac{\ln(x^3 e^x)}{x}?$$

a. $\frac{3(\ln x + e^x)}{x}$
b. $\ln(x^3 e^x - x)$
c. $\ln x^2 + 1$
d. $\frac{3\ln x + x}{x}$
e. $\frac{3\ln x}{x}$

30.) Which of the following is equivalent to the expression:

$$\frac{1 + \frac{2}{x-3}}{5 + 40\left(\frac{x}{x^2-9}\right)}?$$

a. $\frac{1}{5}\left(\frac{x+3}{2x+9}\right)$
b. $\frac{x+3}{x-9}$
c. $\frac{1}{5}\left(\frac{x+3}{x+9}\right)$
d. $\frac{x+3}{2x-9}$
e. $\frac{1}{5}\left(\frac{x-3}{x+9}\right)$