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Graded quiz on Tangent Lines to Functions, Exponents and Logarithms

CALIFICACIÓN DEL ÚLTIMO ENVÍO

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1.

Convert $\frac{1}{49}$ to exponential form, using 7 as the factor.

1 / 1 puntos

☐

49^{-1}

☒

7^{-2}

☐

(7^2)

☐

$\frac{7}{7^3}$

✓ Correcto

The rule for a factor to a Negative exponent is to divide by the same factor to a positive exponent with the same absolute value.

2.

.

1 / 1 puntos

☐

9.46×10^{15} kilometers

☐

9460×10^{12} meters

☐

0.946×10^{16}

☒

9.46×10^{15} meters.

✓ Correcto

9,460 is (9.4×10^3) meters and one trillion meters is 10^{12} meters.
 $(9.4 \times 10^3)(10^{12}) = 9.4 \times 10^{15}$. A kilometer is 1000 meters.

3.

Simplify $(x^8)(y^3)(x^{-10})(y^{-2})$

1 / 1 puntos

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$(x^{-80})(y^{-6})$

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$(x^{-2})(y)$

☐

$(x^2)(y)$

☐

$(x)(y^{-2})$

✓ Correcto

By the Division and Negative Powers Rule, this is $(x^{8-10})(y^{3-2})$

4.

Simplify $[(x^4)(y^{-6})]^{-1}$

1 / 1 puntos

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$(x^{-4})(y^6)$

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$(x^3)(y^{-7})$

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$\frac{(x^4)}{(y^{-6})}$

✓ Correcto

By the Power to a Power Rule, each of the exponents is multiplied by (-1)

5.

Solve for x :

1 / 1 puntos

$\log_2(39x) - \log_2(x - 5) = 4$

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$\frac{23}{80}$

☐

$\frac{39}{23}$

☐

$\frac{80}{38}$

☒

$\frac{-80}{23}$

✓ Correcto

$\log_2 \frac{39x}{(x-5)} = 4$ by the Quotient Rule.

$$\frac{\log_2 \frac{39x}{(x-5)}}{2} = 2^4$$
$$\frac{39x}{(x-5)} = 16$$
$$39x = 16 \times (x-5)$$
$$39x = 16x - 80$$
$$23x = -80$$
$$x = \frac{-80}{23}$$

6.

Simplify this expression:

1 / 1 puntos

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

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$x^{\frac{4}{3}}$

☐

x^{-1}

☒

$x^{\frac{-3}{4}}$

✓ Correcto

We use the Power to a Power Rule -- multiply exponents:
 $x^{\frac{1}{2} \times \frac{-3}{2}} = x^{\frac{-3}{4}}$

7.

Simplify $\log_2 8 - \log_2 4 - (\log_3 4.5 + \log_3 2)$

1 / 1 puntos

☐

1

☐

0

☒

-1

☐

2

✓ Correcto

This is equivalent to:
 $\log_2(\frac{8}{4}) - \log_3(4.5 \times 2) = 1 - 2 = -1$

8.

If $\log_3 19 = 2.680$, what is $\log_9 19$?

1 / 1 puntos

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0.8934

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5.216

✓ Correcto

To convert from \log_3 to \log_9 , divide by $\log_3 9$. Which is equal to 2, so the answer is 1.34

9.

If $\log_{10} b = 1.8$ and $\log_a b = 2.5752$, what is a ?

1 / 1 puntos

☐

6

☒

5

☐

4

☐

3

✓ Correcto

To solve for a in the formula;
 $\log_a b = \frac{\log_x b}{\log_x a}$
 $\log_a b = 2.5752$ and $\log_{10} b = 1.8$
 $\log_{10} b = 1.8$ and $\log_a b = 2.5752$
 $\frac{1.8}{2.5752} = \log_a b$
Treating both sides of equation $\log_{10} a = 0.69897$ as exponents of 10 gives $a = 10^{0.69897} = 5$

10.

An investment of 1,600 is worth 7,400 after 8.5 years. What is the continuously compounded rate of return of this investment?

1 / 1 puntos

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18.02%

☐

19.01%

☐

17.01%

☐

20.01

✓ Correcto

$\frac{\ln \frac{7400}{1600}}{8.5} = 0.18017$

11.

A pearl grows in an oyster at a continuously compounded rate of .24 per year. If a 25-year old pearl weighs 1 gram, what did it weigh when it began to form?

1 / 1 puntos

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0.2478

☐

0.02478

☒

0.002478

✓ Correcto

$e^{(0.24 \times 25)} = \frac{1}{x}$
 $x = \frac{1}{(e^{0.24 \times 25})}$
 $x = \frac{1}{403.4288}$
 $x = 0.002478$

12.

$\log_2 z = 6.754$. What is $\log_{10}(z)$?

1 / 1 puntos

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2.03316

☐

0.49185

✓ Correcto

$\frac{\log_2 z}{\log_2 10} =$
 $(\log_{10} z) \times (\log_2 10) = 3.321928$
Therefore, $\log_{10} z = \frac{6.754}{3.321928} = 2.03316$

13.

Suppose that $g: \mathbb{R} \rightarrow \mathbb{R}$ is a function, and that $g(1) = 10$. Suppose that $g'(a)$ is negative for every single value of a . Which of the following could possibly be $g(1.5)$?

1 / 1 puntos

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$g(1.5) = 9.7$

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$g(1.5) = 103.4$

☐

$g(1.5) = 11$

☐

$g(1.5) = 10.1$

✓ Correcto

Since the slope of the tangent line to the graph of g is negative everywhere on the