NAME:_____

1. 010519b, P.I. A2.A.28
If $\log_5 x = 2$, what is the value of $\sqrt{x}$?

[A] 5 [B] $2^{\frac{2}{5}}$ [C] 25 [D] $\sqrt{5}$

2. 060623b, P.I. A2.A.28
Solve for x: $\log_2(x+1) = 3$

3. 060925b, P.I. A2.A.28
Solve for x: $\log_8(x+1) = \frac{2}{3}$

4. 010819b, P.I. A2.A.28
If $\log_x 9 = -2$, what is the value of x?

[A] 81 [B] $\frac{1}{81}$ [C] $\frac{1}{3}$ [D] 3

5. 080212b, P.I. A2.A.19
If $\log k = c\log v + \log p$, k equals

[A] $v^c p$ [B] $cv + p$

[C] $(vp)^c$ [D] $v^c + p$

6. 080209b, P.I. A2.A.28
In the equation $\log_x 4 + \log_x 9 = 2$, x is equal to

[A] $\sqrt{13}$ [B] 6 [C] 18 [D] 6.5

7. 080624b, P.I. A2.A.28
Solve for x: $\log_b 36 - \log_b 2 = \log_b x$

8. 060230b, P.I. A2.A.28
Solve for x: $\log_4(x^2+3x) - \log_4(x+5) = 1$

9. 060833b, P.I. A2.A.28
Solve for x: $\log_3(x^2-4) - \log_3(x+2) = 2$

10. 080720b, P.I. A2.A.28
If $\log_2 a = \log_3 a$, what is the value of a?

[A] 3 [B] 4 [C] 1 [D] 2

11. 010324b, P.I. A2.A.28
The relationship between the relative size of an earthquake, S, and the measure of the earthquake on the Richter scale, R, is given by the equation $\log S = R$. If an earthquake measured 3.2 on the Richter scale, what was its relative size to the *nearest hundredth*?

12. 060102b, P.I. A2.A.28
The magnitude (R) of an earthquake is related to its intensity (I) by $R = \log(\frac{I}{T})$, where T is the threshold below which the earthquake is not noticed. If the intensity is doubled, its magnitude can be represented by

[A] $2(\log I - \log T)$ [B] $2\log I - \log T$

[C] $\log I - \log T$ [D] $\log 2 + \log I - \log T$

13. 060125b, P.I. A2.A.18
The scientists in a laboratory company raise amebas to sell to schools for use in biology classes. They know that one ameba divides into two amebas every hour and that the formula $t = \log_2 N$ can be used to determine how long in hours, t, it takes to produce a certain number of amebas, N. Determine, to the *nearest tenth of an hour*, how long it takes to produce 10,000 amebas if they start with one ameba.

[1] A

[2] 7, and appropriate work is shown, such as $2^3 = x + 1$.
[1] Appropriate work is shown, but one computational error is made.
or [1] Appropriate work is shown, but one conceptual error is made.
or [1] $2^3 = x + 1$ is written, but no further correct work is shown.
or [1] 7, but no work is shown.
[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously
[2] incorrect procedure.

[2] 3, and appropriate work is shown.
[1] Appropriate work is shown, but one computational error is made.
or [1] Appropriate work is shown, but one conceptual error is made.
or [1] $8^{\frac{2}{3}} = x + 1,$ but no further correct work is shown.
or [1] 3, but no work is shown.
[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously
[3] incorrect procedure.

[4] C

[5] A

[6] B

[2] 18, and appropriate work is shown.
[1] Appropriate work is shown, but one computational error is made.
or [1] Appropriate work is shown, but one conceptual error is made.
or [1] The equation $\log_b \frac{36}{2} = \log_b x$ is written, but the value of x is not found.
or [1] 18, but no work is shown.
[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously
[7] incorrect procedure.

[4] 5 and -4, and appropriate work is shown.
[3] Appropriate work is shown, but one computational error is made.
[2] The correct log equation, $\log_4 \frac{x^2 + 3x}{x + 5} = \log_4 4,$ is shown, but no further work or incorrect work is shown.
[1] One correct logarithmic step is shown, such as $\log_4 \frac{x^2 + 3x}{x + 5}$.
or [1] 5 and -4, but no work is shown.
[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously
[8] incorrect procedure.

[6] 11, and appropriate work is shown.
[5] Appropriate work is shown, but one computational error is made.
or [5] The given equation is solved correctly for *x*, but the extraneous root is not rejected.
[4] Appropriate work is shown, but two or more computational errors are made.
[3] Appropriate work is shown, but one conceptual error is made.
or [3] The equation $x^2 - 9x - 22 = 0$ is written, but no further correct work is shown.
[2] Appropriate work is shown, but one conceptual error and one computational error are made.
or [2] The equation $\frac{x^2 - 4}{x + 2} = 9$ is written, but no further correct work is shown.
[1] The equation $\log_3(x - 2) = 2$ is written, but no further correct work is, shown.
or [1] 11, but no work is shown.
[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously
[9] incorrect procedure.

[10] C

[2] 1,584.89, and appropriate work is shown.
[1] Appropriate work is shown, but one computational or rounding error is made.
or [1] 1,584.89, but no work is shown.
[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously
[11] incorrect procedure.

[12] D

[2] 13.3, and appropriate work is shown.
[1] Appropriate work is shown, but one computational or rounding error is made.
or [1] The correct value is substituted for n, and the equation is converted to exponential form, but it is not solved.
or [1] 13.3, but no work is shown.
[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously
[13] incorrect procedure.