

NAME: _____

P.I. A2.A.27: Solve exponential equations with and without common bases

Solve:

1. Solve for x to the nearest hundredth:

$$3.06^x = 39$$

[A] 3.28 [B] 0.49 [C] 1.59 [D] 0.31

4. $16^{4x-5} = 64$

2. Solve for x to the nearest hundredth:

$$3.34^x = 27$$

[A] 1.43 [B] 0.52 [C] 2.73 [D] 0.37

5. $8^{6x-4} = 4$

3. Solve for x to the nearest hundredth:

$$5.11^x = 23$$

[A] 1.92 [B] 1.36 [C] 0.71 [D] 0.52

6. $9^{7x+9} = 27$

NAME: _____

7. Compare the quantity in Column A with the quantity in Column B.

Column A

Column B

x , when $10^{4x} = 52$ y , when $4^{3y} = 100$

- [A] The quantity in Column A is greater.
[B] The quantity in Column B is greater.
[C] The two quantities are equal.
[D] The relationship cannot be determined on the basis of the information supplied.

9. The function $y = 400(1.03)^x$ models the kindergarten population y of an elementary school x years after the year 2000. Graph the function on your graphing calculator. Estimate when the kindergarten population will reach 500.

10. A forest is losing trees at the rate of 15% per year. After how many years will the forest be reduced to 25% of its current size?

8. Find the pH level to the nearest tenth of a liquid if its $[H^+]$ is about 2.8×10^{-8}

$$\left(H^+ = \left(\frac{1}{10} \right)^{pH} \right).$$

11. The half-life of carbon-14 is 5700 years. Find the age of a sample at which 25% of the radioactive nuclei originally present have decayed.

- [A] 2366 years [B] 3366 years
[C] 2916 years [D] 2466 years

[1] A

[2] C

[3] A

[4] $\frac{13}{8}$

[5] $\frac{7}{9}$

[6] $-\frac{15}{14}$

[7] B

[8] 7.6

[9] in about $7\frac{1}{2}$ years after the year 2000

[10] After $8\frac{1}{2}$ years the forest will be 25% of what it is now.

[11] A