

Name: _____

EOC Review #7

6) $2^1 + 2^x = 32$

- A) 4

B) 2

- C) 16

- D) -2

$2^{1+2x} = 2^5$

$1+2x = 5$
 $2x = 4$
 $x = 2$

7) $18^x = 1$

- A) 1

B) $\frac{1}{18}$

C) 0

- D) \emptyset

* anything to the zero power = 1.

$x \log 18 = \log 1$
 $x = \frac{\log 1}{\log 18} = \frac{0}{\log 18} = 0$

9) $27 - 3x = \frac{1}{4}$

- A) -3

C) $\frac{1}{2}$

D) 6

$7 - 3x \log 2 = \log \frac{1}{4}$

$7 - 3x = -2$
 $-3x = -9$
 $x = 3$

14 Solve $11^{4x} = 48$. Round to the nearest ten-thousandth.

A) 0.4306

B) 0.2727

C) 1.0909

D) 1.9091

$4x \log 11 = \log 48$

$4x = \frac{\log 48}{\log 11}$

$x = .4036$

15) Which of the following intervals best represents the range of $f(x) = \log_6(3x)$ over the domain $[2, 12]$?

A. $[0.39, 1.39]$

B. $[1.00, 2.00]$

C. $[1.00, 6.00]$

D. $[1.16, 4.16]$

graph the function
Domain = x values
Range = y values
- look at table for

x values from 2-12
and determine y values

16) $4^2 = x$

A) $\log_x 4 = 2$

B) $\log_4 2 = x$

C) $\log_2 x = 4$

D) $\log_4 x = 2$

$\log_4 x = 2$

19) $\log_2 16 = x$

A) $16^x = 2$

B) $x^2 = 16$

C) $16^2 = x$

D) $2^x = 16$

$2^x = 16$

25) $\log_9 95$

A) 9

B) 1

C) 45

D) 5

$\frac{\log 9^5}{\log 9} = \frac{\log 59049}{\log 9}$

26) $\ln \sqrt{6}$

A) $\sqrt{6}$

B) 36

C) 6

D) e

41) $\log(3x) = \log 2 + \log(x-1)$

A) $\left\{ \frac{2}{5} \right\}$

B) $\left\{ \frac{1}{2} \right\}$

C) $\{2\}$

D) $\{2\}$

$\ln \sqrt{6}$

$$\log 3x = \log 2(x-1)$$

$$3x = 2x - 2$$

$$x = -2$$

27 Write the equation $\log_4 128 = \frac{7}{2}$ in exponential form.

A) $4^{128} = \frac{7}{2}$

B) $128^2 = 4$

C) $\left(\frac{7}{2}\right)^4 = 128$

D) $4^{\frac{7}{2}} = 128$

exponent

base

$$4^{7/2} = 128$$

28) $\log_4 24 - \log_4 6$

A) 6

B) 24

C) 4

D) 1

$$\log_4 \frac{24}{6} = \log_4 4 = 1$$

42) $\log_2(5x+8) = \log_2(5x+3)$

A) 0

B) 5

C) $\left\{ \frac{11}{5} \right\}$

D) 8

$$\log_2(5x+8) = \log_2(5x+3)$$

$$5x+8 = 5x+3$$

$$8 \neq 3$$

$$\left(\frac{3}{5}\right)^x = 2^{1-x}$$

A) $\ln\left(\frac{3}{5}\right) - \ln 2 \approx -1.204$

B) $\frac{\ln\left(\frac{3}{5}\right) + \ln 2}{\ln 2} \approx 0.263$

C) $\frac{\ln 2}{\ln\left(\frac{3}{5}\right) + \ln 2} \approx 3.802$

D) $\frac{\ln 6}{\ln 10} \approx 0.778$

can also just plug in values for x to see which works.

29 Write an exponential function $y = ab^x$ for a graph that includes (1, 12) and (0, 9).

A) $y = 1(2.5)^x$

B) $y = 9(2)^x$

C) $y = 9\left(\frac{4}{3}\right)^x$

D) $y = 12\left(\frac{1}{3}\right)^x$

$$y = a \cdot b^x$$

$$9 = a \cdot b^0$$

$$a = 9$$

$$12 = 9 \cdot b$$

$$\frac{12}{9} = b$$

$$\frac{4}{3} = b$$

$$y = 9\left(\frac{4}{3}\right)^x$$

$$-357x = -1.357$$

$$x = 3.8011$$

$$x \ln \frac{3}{5} = 1 - x \ln 2$$

$$x = 1 - x \left(\frac{\ln 2}{\ln 3/5}\right)$$

$$1 - x(-1.357)$$

$$-1.357 + 1.357x = x - 9$$