

Algebra 2 Weos 11-7-12 Class Notes

Homework Review - Pg 270

$$\begin{aligned} \textcircled{2} \quad 4^{2x} &= 32^{\frac{1}{2}} \\ \downarrow \quad \downarrow \\ (2^2)^{2x} &= (2^5)^{\frac{1}{2}} \\ 2^{4x} &= 2^{\frac{5}{2}} \end{aligned}$$

$$\frac{4x}{4} = \frac{\frac{5}{2}}{4}$$

$$\begin{aligned} \text{CK} \quad 4^{2(\frac{5}{8})} &= 32^{\frac{1}{2}} \\ 4^{\frac{5}{4}} &= 32^{\frac{1}{2}} \\ (2^2)^{\frac{5}{4}} &= (2^5)^{\frac{1}{2}} \checkmark \end{aligned}$$

$$\boxed{x = \frac{5}{8}}$$

$$\begin{aligned} \textcircled{3} \quad 9^x &= 3^{x-2} \\ (3^2)^x &= 3^{(x-2)} \\ 3^{2x} &= 3^{(x-2)} \\ \overbrace{2x}^{x-2} &= \overbrace{x-2}^{x-2} \\ \begin{array}{r} 2x &= & x-2 \\ -x & & -x \\ \hline x &= & -2 \end{array} \end{aligned}$$

$$\boxed{x = -2}$$

$$\text{CK} \quad 9^{(-2)} = 3^{(-2)-2}$$

$$9^{-2} = 3^{-4}$$

$$\frac{1}{9^2} = \frac{1}{3^4} \checkmark$$

$\swarrow \quad \searrow$
 $3^2 \quad 3^2$

$$\begin{aligned}
 \textcircled{4} \quad 2^x &= 4^{x+1} \\
 2^x &= (2^2)^{(x+1)} \\
 2^x &= 2^{2x+2} \\
 \overbrace{x} &= 2x+2 \\
 \boxed{-2} &= x
 \end{aligned}$$

$$\begin{aligned}
 \text{CK} \quad 2^{(-2)} &\stackrel{?}{=} 4^{(-2)+1} \\
 \frac{1}{4} &\stackrel{?}{=} 4^{-1} \checkmark
 \end{aligned}$$

$$\begin{aligned}
 \textcircled{6} \quad \left(\frac{1}{4}\right)^{2x} &= \left(\frac{1}{2}\right)^x \\
 \left[\left(\frac{1}{2}\right)^2\right]^{2x} &= \left(\frac{1}{2}\right)^x \\
 \left(\frac{1}{2}\right)^{4x} &= \left(\frac{1}{2}\right)^x
 \end{aligned}$$

$$\text{CK} \quad \left(\frac{1}{4}\right)^0 \stackrel{?}{=} \left(\frac{1}{2}\right)^0 \checkmark$$

$$\begin{array}{r}
 4x \\
 -x \\
 \hline
 \end{array}
 =
 \begin{array}{r}
 x \\
 -x \\
 \hline
 \end{array}$$

$$3x = 0$$

$$\boxed{x = 0}$$

$$\textcircled{9} \quad \log_2(\underline{7x+1}) = \log_2(\underline{2-x})$$

$$7x+1 = 2-x$$

$$8x = 1$$

$$x = \frac{1}{8}$$

ck

$$\log_2(7(\frac{1}{8})+1) \stackrel{?}{=} \log_2(2-(\frac{1}{8}))$$

$$\log_2(\frac{15}{8}) \stackrel{?}{=} \log_2(\frac{15}{8}) \checkmark$$

$$\textcircled{11} \quad \log 72 - \log\left(\frac{2x}{3}\right) = 0$$

$$\log(72) = \log\left(\frac{2x}{3}\right)$$

$$\frac{3}{2} \cdot 72 = \frac{2x}{3} = \frac{3}{2}$$

$$108 = x$$

ck

$$\log 72 - \log\left(\frac{2 \cdot 108}{3}\right) \stackrel{?}{=} 0 \checkmark$$

$$\textcircled{14} \quad \log 50 + \log\left(\frac{x}{2}\right) = 2$$

$$\log(25x) = 2$$

$$10^2 = 25x$$

$$\frac{100}{25} = \frac{25x}{25}$$

$$\boxed{4 = x} \quad \checkmark$$

$$\underline{\underline{ck}} \quad \log 50 + \log\left(\frac{4}{2}\right) \stackrel{?}{=} 2$$

$$\log\left(\frac{200}{2}\right) = 2$$

$$\log(100) = 2 \quad \checkmark$$

Worksheet Problems

$$(17) \quad 17^a - 4 = 90$$

$$17^a = 94$$

$$\log(17^a) = \log(94)$$

$$\frac{a \log 17}{\log 17} = \frac{\log 94}{\log 17}$$

COB *

$$\log_b X = \frac{\log X}{\log b}$$

$$a = \frac{\log 94}{\log 17} = \boxed{\log_{17}(94)}^*$$

$$(19) \quad \frac{9 \cdot 5^x}{9} = \frac{14}{9}$$

$$5^x = \frac{14}{9}$$

$$\log 5^x = \log\left(\frac{14}{9}\right)$$

$$x \log 5 = \log\left(\frac{14}{9}\right)$$

$$x = \frac{\log\left(\frac{14}{9}\right)}{\log(5)}$$

$$\therefore \boxed{x = \log_5\left(\frac{14}{9}\right)}$$

$$\textcircled{37} \quad \frac{-4 \cdot 2^{a-6}}{-4} = \frac{-79}{-4}$$

$$2^{a-6} = \frac{79}{4}$$

$$\log(2^{a-6}) = \log\left(\frac{79}{4}\right)$$

$$(a-6) \log 2 = \log \frac{79}{4}$$

$$a-6 = \frac{\log \frac{79}{4}}{\log 2}$$

$$a = \log_2\left(\frac{79}{4}\right) + 6$$