

## College Algebra

Name: Key

## 3.5 Day 4 Practice

Date: \_\_\_\_\_ Period: \_\_\_\_\_

Solve. If necessary, round to four decimal places. Don't forget to check your answers!

1)  $5 \cdot 10^x = 25$

$$10^x = 5$$

$$x \log 10 = \log 5$$

$$x = \frac{\log 5}{\log 10}$$

$$x = .6990$$

3)  $e^{x-3} - 8 = 10$

$$e^{x-3} = 18$$

$$\ln 18 = x - 3$$

$$\ln 18 + 3 = x$$

$$5.8904 = x$$

5)  $-6e^{8x+8} - 3 = -23$

$$-6e^{8x+8} = -20$$

$$e^{8x+8} = \frac{10}{3}$$

$$\ln \frac{10}{3} = 8x + 8$$

$$\frac{\ln \frac{10}{3} - 8}{8} = x$$

$$x = -.8495$$

2)  $\log_5 12 = 3x$

$$\frac{\log 12}{\log 5} = 3x$$

$$\frac{\log 12}{\log 5} = x$$

$$.5147 = x$$

4)  $2^{(5x^2+3x-10)} = 16^{2x}$

$$2^{5x^2+3x-10} = (2^4)^{2x}$$

$$5x^2 + 3x - 10 = 8x$$

$$5x^2 - 5x - 10 = 0$$

$$5(x^2 - x - 2) = 0$$

$$5(x-2)(x+1)$$

$$x = 2 \quad x = -1$$

6)  $5 \cdot 18^{6x} = 26$

$$18^{6x} = \frac{26}{5}$$

$$6x \log 18 = \log \frac{26}{5}$$

$$x = \frac{\log \frac{26}{5}}{6 \log 18}$$

$$x = .0951$$

$$7) \log_2 \left( \frac{x+1}{x} \right) = 5$$

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

$$32x = x+1$$

$$31x = 1$$

$$x = \frac{1}{31}$$

$$8) 3^{2x} = 80$$

$$2x \cdot \log 3 = \log 80$$

$$x = \frac{\log 80}{2 \log 3}$$

$$x = 1.9943$$

$$9) \log_2(x+2) + \log_2(x) = 3$$

$$\log_2 x(x+2) = 3$$

$$2^3 = x^2 + 2x$$

$$0 = x^2 + 2x - 8$$

$$0 = (x+4)(x-2)$$

$$x = -4 \quad x = 2$$

$$10) 8^{x^2-2x} = \left( \frac{1}{32} \right)^{-2x+1}$$

$$(2^3)^{x^2-2x} = (2^{-5})^{-2x+1}$$

$$3x^2 - 6x = -10x + 5$$

$$3x^2 - 14x + 5 = 0$$

$$3x^2 - 15x - 1x + 5$$

$$3x(x-5) - 1(x-5)$$

$$(3x-1)(x-5) = 0$$

$$x = \frac{1}{3} \quad x = 5$$

$$\begin{array}{r} 15 \\ -15 \\ \hline -1 \\ -16 \end{array}$$

$$11) \log(x^2 - x + 80) = 2$$

$$10^2 = x^2 - x + 80$$

$$0 = x^2 - x - 20$$

$$0 = (x-5)(x+4)$$

$$x = 5 \quad x = -4$$

$$12) 5 \ln(x-4) - 12 = 6$$

$$5 \ln(x-4) = 18$$

$$\ln(x-4) = \frac{18}{5}$$

$$e^{18/5} = x-4$$

$$e^{18/5} + 4 = x$$

$$40.5982 = x$$