College Algebra
3.5 Day 1 Practice

Name: _____
Date: _____ Period: _____

Solve. Don't forget to check your answers!

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

$2x+1=3x-2$

$1=x-2$

$3=x$

2.) $\log(x^2-2)=\log 23$

$x^2-2=23$

$x^2-2-23=0$

$x=\frac{2\pm\sqrt{(-2)^2-4(1)(23)}}{2(1)}$

$x=\frac{2\pm 9.798}{2}=5.899, -3.899$

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

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

$x=10$

4.) $\log x+\log(x-4)=\log 12$

$\log[x(x-4)]=\log 12$

$x(x-4)=12$

$x^2-4x=12$

$x^2-4x-12=0$

$(x-6)(x+2)=0$

$x=6, -2$ ← check in calc. error!

5.) $\log_4[(x-3)(x-2)]=\log_4(2x+36)$

$(x-3)(x-2)=2x+36$

$x^2-5x+6=2x+36$

$x^2-7x-30=0$

$(x-10)(x+3)=0$

$x=10, -3$

6.) $7^{2x^2-1}=7^{x+2}$

$2x^2-1=x+2$

$2x^2-x-3=0$

$(2x-3)(x+1)=0$

$x=3/2, -1$

7.) $\ln(x-6)=\ln(2x+1)$

$x-6=2x+1$

$-6=x+1$

$-7=x$

8.) $5^{-2x}=5^{3x-9}$

$-2x=3x-9$

$-5x=-9$

$x=9/5$

9.) $6^{3x}=6^{6x-4}$

$3x=6x-4$

$-3x=-4$

$x=4/3$

10.) $\log_8(x-1)=\log_8(x-2)-\log_8(x+2)$

$\log_8(x-1)=\log_8\frac{(x-2)}{(x+2)}$

$(x+2)\cdot(x-1)=\frac{(x-2)}{(x+2)}\cdot(x+2)$

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

$x^2+x-2=x-2$

$x^2=0$

$x=0$

11.) $e^{x^2-3}=e^{4x+2}$

$x^2-3=4x+2$

$x^2-4x-5=0$

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

$x=5,-1$

12.) $\log_7(x+5)+\log_7(x+1)=\log_7(x-1)$

$\log_7(x+5)(x+1)=\log_7(x-1)$

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

$x^2+6x+5=x-1$

$x^2+5x+6=0$

$(x+3)(x+2)=0$

$x=-3,-2$