PC

HW46

35. $e^{2x}+5=16$

$e^{2x}=11$

$2x\ln e=\ln 11$

$x=\frac{\ln 11}{2}$

$\boxed{x=1.20}$

36. $2.5e^{x+4}=14$

$e^{x+4}=5.6$

$(x+4)\ln e=\ln 5.6$

$x+4=\ln 5.6$

$x=\ln 5.6-4$

$\boxed{x=-2.28}$

37. $0.75e^{3.4x}-0.3=80.1$

$0.75e^{3.4x}=80.4$

$e^{3.4x}=107.2$

$3.4x\ln e=\ln 107.2$

$x=\frac{\ln 107.2}{3.4}$

$\boxed{x=1.37}$

39. $7^{2x+1}=3^{x+3}$

$\ln 7^{2x+1}=\ln 3^{x+3}$

$\ln 7(2x+1)=\ln 3(x+3)$

$2x\ln 7+\ln 7=x\ln 3+3\ln 3$

$2x\ln 7-x\ln 3=3\ln 3-\ln 7$

$x(2\ln 7-\ln 3)=3\ln 3-\ln 7$

$x\left(\ln\frac{49}{3}\right)=\ln\frac{81}{7}$

$x=\frac{\ln\frac{81}{7}}{\ln\frac{49}{3}}$

$\boxed{x=0.88}$

40. $11^{x+1}=7^{x-1}$

$(x+1)\ln 11=(x-1)\ln 7$

$x\ln 11+\ln 11=x\ln 7-\ln 7$

$x\ln 11-x\ln 7=-\ln 7-\ln 11$

$x(\ln 11-\ln 7)=-\ln 7-\ln 11$

$x=\frac{-\ln 7-\ln 11}{\ln 11-\ln 7}$

$\boxed{x=-9.61}$

41. $9^{x+2}=2^{5x-4}$

$(x+2)\ln 9=(5x-4)\ln 2$

$x\ln 9+2\ln 9=5x\ln 2-4\ln 2$

$x\ln 9-5x\ln 2=-4\ln 2-2\ln 9$

$x(\ln 9-5\ln 2)=-4\ln 2-2\ln 9$

$x=\frac{-4\ln 2-2\ln 9}{\ln 9-5\ln 2}$

$\boxed{x=5.65}$

42. $4^{x-3}=6^{2x-1}$

$(x-3)\ln 4=(2x-1)\ln 6$

$x\ln 4-3\ln 4=2x\ln 6-\ln 6$

$x\ln 4-2x\ln 6=-\ln 6+3\ln 4$

$x(\ln 4-2\ln 6)=-\ln 6+3\ln 4$

$x=\frac{-\ln 6+3\ln 4}{\ln 4-2\ln 6}$

$\boxed{x=-1.08}$