Problem   **1**   *Solve for x in the following exponential equation:*

$$\left(\frac{1}{4}\right)^{-3\,x+5} = \left(\frac{1}{8}\right)^{-3\,x-1}$$

$x = \boxed{-\dfrac{13}{3}}$.

Feedback(`attempt` ***):***   *You want to rewrite everything so that it is the same base. For example, you can write $\dfrac{1}{4} = 2^{-2}$ and $\dfrac{1}{8} = 2^{-3}$. Then use the fact that if both sides have the same base, their exponents must be equal (the one to one property of exponents) to get an equation you can solve.*

Problem   **2**   *Solve for x in the following exponential equation:*

$$\left(\frac{1}{7}\right)^{x-5} = \left(\frac{1}{49}\right)^{-x+2}$$

$x = \boxed{3}$.

Feedback(`attempt` ***):***   *You want to rewrite everything so that it is the same base. For example, you can write $\dfrac{1}{7} = 7^{-1}$ and $\dfrac{1}{49} = 7^{-2}$. Then use the fact that if both sides have the same base, their exponents must be equal (the one to one property of exponents) to get an equation you can solve.*

Problem   **3**   *Solve for x in the following exponential equation:*

$$(2)^{3\,x-5} = (2)^{-3\,x-2}$$

$x = \boxed{\dfrac{1}{2}}$.

Feedback(`attempt` ***):***   *You want to rewrite everything so that it is the same base. For example, you can write $2 = 2^1$ and $2 = 2^1$. Then use the fact that if both sides have the same base, their exponents must be equal (the one to one property of exponents) to get an equation you can solve.*

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Problem   4 *Solve for x in the following exponential equation:*

$$(6)^{-5\,x} = (36)^{2\,x-3}$$

$x = \boxed{\dfrac{2}{3}}$.

***Feedback*(attempt):**   *You want to rewrite everything so that it is the same base. For example, you can write $6 = 6^1$ and $36 = 6^2$. Then use the fact that if both sides have the same base, their exponents must be equal (the one to one property of exponents) to get an equation you can solve.*