Solutions

1.
$$2^{5x-7} = 8$$
$$\log 2^{5x-7} = \log 8$$
$$(5x - 7) \cdot \log 2 = \log 8 \qquad \big| \div \log 2$$
$$5x - 7 = \frac{\log 8}{\log 2} = 3$$
$$5x = 10$$
$$x = 2$$

or more simple:
$$2^{5x-7} = 8 = 2^3$$
$$5x - 7 = 3$$
$$x = 2$$

2.
$$4^{6x-16} = 16$$
$$\log 4^{6x-16} = \log 16$$
$$(6x - 16) \cdot \log 4 = \log 16 \qquad \big| \div \log 4$$
$$6x - 16 = 2$$
$$x = 3$$

or more simple:
$$4^{6x-16} = 16 = 4^2$$
$$6x - 16 = 2$$
$$x = 3$$