Objective 4 - Solve Exponential

Solve exponential equations with the same or different bases.

Link to section in online textbook.

Watch the video below to learn how to solve **any** type of exponential equation. You can print out these notes to follow along and keep notes to organize your thoughts.

YouTube link: `https://www.youtube.com/watch?v=dR7GkfE9z7E`

*Note: Yes, you can use this method all of the time! While changing the bases to be the same to rewrite the question can be easier sometimes, taking the log of both sides will **always** solve exponential equations.*

Question 1 *Solve the exponential equation below.*

$$4^{-5\,x-2} = 4^{-3\,x-4}$$

$x =$ $\boxed{1.0}$

Question 2 *Solve the exponential equation below.*

$$36^{2\,x-4} = 6^{2\,x+4}$$

$x =$ $\boxed{6.0}$

Question 3 *Solve the exponential equation below.*

$$\left(\frac{1}{36}\right)^{-2\,x-4} = 6^{3\,x+4}$$

$x =$ $\boxed{-4.0}$

Question 4 *Solve the exponential equation below.*

Learning outcomes:
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$$4^{-3\,x+4} = 8^{3\,x-4}$$

$x =$ $\boxed{1.333}$

Question 5 *Solve the exponential equation below.*

$$7^{5\,x-4} = 5^{-6\,x-2}$$

$x =$ $\boxed{0.235}$

Question 6 *Solve the exponential equation below.*

$$16^{-2\,x+3} = 49^{4\,x+5}$$

$x =$ $\boxed{-0.528}$

Question 7 *Solve the exponential equation below.*

$$49^{6\,x-2} = \frac{1}{8}^{4\,x+3}$$

$x =$ $\boxed{0.049}$

Question 8 ***Main takeaway:*** *Before looking, you should work through the previous problems. Have you finished working through the examples?* $\boxed{Yes}$

Feedback(*`correct`*): *While changing the bases to be the same to rewrite the question can be easier sometimes, taking the log of both sides will* **always** *solve exponential equations.*
