

Exponenciální rovnice 2:

$$4^{x+1} - 8 * 4^{x-1} = 32$$

$$4^{x-1} (4^2 - 8) = 32$$

$$4^{x-1} . 8 = 32 / 8$$

$$4^{x-1} = 4$$

$$x - 1 = 1$$

$$x = 2$$

$$\text{NSolve}[4^{x+1} - 8 * 4^{x-1} == 32, x] \quad \{ \{x \rightarrow 2. \} \}$$

JINÝ ZPŮSOB ŘEŠENÍ:

$$4^{x+1} - 8 * 4^{x-1} = 32$$

$$a^{x+y} = a^x + a^y$$

$$a^{x-y} = \frac{a^x}{a^y}$$

$$4 * 4^x - 8 * \frac{4^x}{4} = 32$$

$$4 * 4^x - 2 * 4^x = 32$$

$$2 * 4^x = 32 \quad /: 2$$

$$4^x = 16$$

$$x = 2$$

$$3^{2x-1} + 3^{2x-2} - 3^{2x-4} = 315$$

$$3^{2x-4}(3^3 + 3^2 - 1) = 315$$

$$3^{2x-4} * 35 = 315 \quad /: 35$$

$$3^{2x-4} = 9$$

$$2x - 4 = 2$$

$$x = 3$$

$$\text{NSolve}[3^{2x-1} + 3^{2x-2} - 3^{2x-4} == 315, x]$$

$$\{\{x \rightarrow 3.\}\}$$

Příklady k procvičení:

(zkoušku proveďte výpočtem v programu Mathematica)

a) $5 * 4^{x+1} - 4^{x+2} = 4^{x-1} + 240$

b) $5 * 2^{x+2} - 6 * 3^{x+2} = 3^{x+3} + 2 * 2^{x+1}$

c) $8^{x-1} - 3 = 7 * 8^{x-2} + 5$

d) $5^x + 1 = 3 * 5^{x-1} + 11$

Výsledky úloh

a)

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In[5]:= 5*4x+1 - 4x+2 == 4x-1 + 240  
NSolve[5*4x+1 - 4x+2 == 4x-1 + 240, x]
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Out[6]= {{x -> 3.}}
```

b)

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In[7]:= NSolve[5*2x+2 - 6*3x+2 == 3x+3 + 2*2x+1, x]
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Out[7]= {{x -> -4.}}
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c)

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In[9]:= NSolve[8x-1 - 3 == 7*8x-2 + 5, x]
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```
Out[9]= {{x -> 3.}}
```

d)

```
NSolve[5x + 1 == 3*5x-1 + 11, x]
```

```
{{x -> 2.}}
```