Domácí úkol № 6 ISM

3) a) $\left(\frac{9}{8}\right)^x \cdot \left(\frac{2}{3}\right)^x = \frac{27}{64}$

$\left(\frac{9\cdot 2}{8\cdot 3}\right)^x = \frac{27}{64}$

$\left(\frac{3}{4}\right)^x = \left(\frac{3}{4}\right)^3$

$x = 3$

b) $\left(\frac{5}{2}\right)^{2-7x} = \left(\frac{2}{5}\right)^{7-3x}$

$\left(\frac{2}{5}\right)^{7x-2} = \left(\frac{2}{5}\right)^{7-3x}$

$7x - 2 = 7 - 3x$

$10x = 9$

$x = 0{,}9$

10) $25^{2x} - 3 \cdot 25^x - 10 = 0$

$25^x = t \quad , t > 0$

$t^2 - 3t - 10 = 0$

$(t-5)(t+2) = 0$

$t = 5 \quad \vee \quad t = -2$

$t = 5 \Rightarrow 25^x = 5$

$5^{2x} = 5^1$

$2x = 1$

$x = \frac{1}{2}$

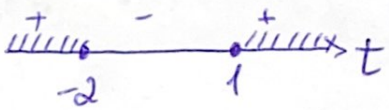
23) $\log_3^2 x + \log_3 x \geq \log_3 9$

$x > 0; \quad \log_3 x = t$

$t^2 + t \geq 2$

$t^2 + t - 2 \geq 0$

$(t-1)(t+2) \geq 0$



1) $\log_3 x \leq -2$

$\log_3 x \leq \log_3 \frac{1}{9}$

$0 < x \leq \frac{1}{9}$

2) $\log_3 x \geq 1$

$\log_3 x \geq \log_3 3$

$x \geq 3$

Výsledek: $x \in (0; \frac{1}{9}\rangle \cup \langle 3; +\infty)$.