A. Vyšetřete stejnoměrnou konvergenci následujících posloupností funkcí:

1. $f_n(x) = \dfrac{n^2x^2}{1+n^2x^2}$, 2. $f_n(x) = \dfrac{x^n}{1+x^n},\ x > -1,$

3. $f_n(x) = x^n - x^{n+1},\ x > -1,$ 4. $f_n(x) = \sqrt[n]{1+x^n},\ x \geq 0,$

5. $f_n(x) = \exp(-(x-n)^2)$, 6. $f_n(x) = x^n \exp(-nx),\ x \geq 0,$

7. $f_n(x) = x^\alpha \exp(-nx),\ x \geq 0,$ $*$8. $f_n(x) = \left(1 + \dfrac{x}{n}\right)^n,$

9. $f_n(x) = \dfrac{nx}{1+n+x},\ x \geq -1,$ 10. $f_n(x) = \sin(\pi x^n),\ |x| \leq 1,$

11. $f_n(x) = \dfrac{\arctan(nx)}{nx},\ x > 0,$ 12. $f_n(x) = \dfrac{x}{n} \ln\left(\dfrac{x}{n}\right), x > 0,$

13. $f_n(x) = n\left(\sin(x + \dfrac{1}{n}) - \sin x\right),$ $*$14. $f_n(x) = \sqrt[2n]{x^n + |\ln x|},\ x > 0,$

15. $f_n(x) = n \ln\left(1 + \dfrac{x}{n}\right),\ x > -1,$ 16. $f_n(x) = \dfrac{1+x^{n+1}}{1+x^n},\ x > -1,$

17. $f_n(x) = \sqrt[n]{x+n},\ x > -1,$ 18. $f_n(x) = \dfrac{\ln(nx)}{nx},\ x > 0.$