

SOUHRN – TAYLORŮV POLYNOM

Níže uvedené příklady se objevily ve zkouškových testech v minulých letech.

| Zadání | a | Výsledky |
|--|---------------------|--|
| 1) $f(x) = x^2 + 2 - \sqrt{1-x}$ | $a = 0$ | 1✓ $T_3(x) = 1 + \frac{1}{2}x + \frac{9}{8}x^2 + \frac{1}{16}x^3$ |
| 2) $f(x) = (x-1) \cdot \ln x + 1$ | $a = 1$ | 2✓ $T_3 = 1 + (x-1)^2 - \frac{1}{2} \cdot (x-1)^3$ |
| 3) $f(x) = (x-2) \cdot \ln(x-3) + 1$ | $a = 4$ | 3✓ $T_3(x) = 1 + 2 \cdot (x-4) + \frac{1}{6} \cdot (x-4)^3$ |
| 4) $f(x) = x^2 - \ln(2x-1)$ | $a = 1$ | 4✓ $T_3(x) = 1 + 3 \cdot (x-1)^2 - \frac{8}{3} \cdot (x-1)^3$ |
| 5) $f(x) = (x+2) \cdot \ln(x-3) - 1$ | $a = 4$ | 5✓ $T_3(x) = -1 + 6(x-4) - 2 \cdot (x-4)^2 + \frac{3}{2} \cdot (x-4)^3$ |
| 6) $f(x) = x^{\frac{3}{2}} - \sqrt{3-2x}$ | $a = 1$ | 6✓ $T_3(x) = \frac{5}{2} \cdot (x-1) + \frac{7}{8} \cdot (x-1)^2 + \frac{7}{16} \cdot (x-1)^3$ |
| 7) $f(x) = x^2 - \sqrt{2-x}$ | $a = 1$ | 7✓ $T_3(x) = \frac{5}{2} \cdot (x-1) + \frac{9}{8} \cdot (x-1)^2 + \frac{1}{16} \cdot (x-1)^3$ |
| 8) $f(x) = x^2 - x + 2e^{2x+1}$ | $a = -\frac{1}{2}$ | 8✓ $T_3(x) = \frac{11}{4} + 2 \cdot \left(x + \frac{1}{2}\right) + 5 \cdot \left(x + \frac{1}{2}\right)^2 + \frac{8}{3} \cdot \left(x + \frac{1}{2}\right)^3$ |
| 9) $f(x) = x^2 - 2x + 1 + \cos(3x)$ | $a = 0$ | 9✓ $T_3(x) = 2 - 2x - \frac{7}{2}x^2$ |
| 10) $f(x) = x \cdot e^{-2x}$ | $a = 0$ | 10✓ $T_3(x) = x \cdot (1 - 2x + 2x^2)$ |
| 11) $f(x) = x^{\frac{5}{2}} - \sqrt{2-x}$ | $a = 1$ | 11✓ $T_3(x) = 3 \cdot (x-1) + 2 \cdot (x-1)^2 + \frac{27}{2} \cdot (x-1)^3$ |
| 12) $f(x) = x^2 + x + 3 - e^{2x+1}$ | $a = \frac{1}{2}$ | 12✓ $T_3(x) = \frac{1}{4} \cdot (15 - 4e^2) + (2 - 2e^2) \cdot \left(x - \frac{1}{2}\right) + (1 - 2e^2) \cdot \left(x - \frac{1}{2}\right)^2 - \frac{4}{3}e^2 \cdot \left(x - \frac{1}{2}\right)^3$ |
| 13) $f(x) = \frac{1}{x} + \sqrt{3+2x}$ | $a = -1$ | 13✓ $T_3(x) = -\frac{3}{2} \cdot (x+1)^2 - \frac{1}{2} \cdot (x+1)^3$ |
| 14) $f(x) = x^2 + 3 + e^{2x-1}$ | $a = \frac{1}{2}$ | 14✓ $T_3(x) = \frac{17}{4} + 3 \cdot \left(x - \frac{1}{2}\right) + 3 \cdot \left(x - \frac{1}{2}\right)^2 + \frac{4}{3} \cdot \left(x - \frac{1}{2}\right)^3$ |
| 15) $f(x) = \cos 2x + \sqrt{x} \cdot \sin \frac{x}{2}$ | $a = \frac{\pi}{2}$ | 15✓ Nepočítán |
| 16) $f(x) = \frac{1}{2} \cdot \sin 2x + \cos x$ | $a = \frac{\pi}{4}$ | 16✓ Nepočítán |

- 17) $f(x) = \sin x + 2 \cdot \cos 2x$ $a = \frac{\pi}{4}$ 17✓ Nepočítán
- 18) $f(x) = \sqrt{2} \cdot x^{\frac{3}{2}} - \ln\left(\frac{x}{2}\right)$ $a = 2$ 18✓ Nepočítán
- 19) $f(x) = 3 + 2 \ln(9x^2 - 1)$ $a = 0$ 19✓ Nepočítán
- 20) $f(x) = \sin\left(x + \frac{\pi}{3}\right) + \cos\left(2x - \frac{\pi}{6}\right)$ $a = 0$ 20✓ Nepočítán
- 21) $f(x) = \frac{8}{x} + \ln\left(\frac{x}{2}\right)$ $a = 2$ 21✓ Nepočítán