Taylor/Maclaurin

Taylor

1. $taylor\ \ln(x)$

2. $taylor\ \cos(x)$

3. $taylor\ \dfrac{1}{x}$

4. $taylor\ \dfrac{1}{1-x}$

5. $taylor\ \dfrac{4}{x}$

6. $taylor\ \ln(x),\ x=1$

7. $taylor\ \ln(1+x)$

8. $taylor\ \dfrac{1}{x^2}$

9. $taylor\ \dfrac{2}{x}$

10. $taylor\ e^{-x}$

Answers

Taylor/Maclaurin

Taylor

1. $(x-1) - \frac{1}{2}(x-1)^2 + \frac{1}{3}(x-1)^3 - \frac{1}{4}(x-1)^4 + \frac{1}{5}(x-1)^5 + \ldots$

2. $\sum_{n=0}^{\infty} (-1)^n \frac{x^{2n}}{(2n)!}$

3. $1 - (x-1) + (x-1)^2 - (x-1)^3 + (x-1)^4 + \ldots$

4. $\sum_{n=0}^{\infty} x^n$

5. $4 - 4(x-1) + 4(x-1)^2 - 4(x-1)^3 + 4(x-1)^4 + \ldots$

6. $(x-1) - \frac{1}{2}(x-1)^2 + \frac{1}{3}(x-1)^3 - \frac{1}{4}(x-1)^4 + \frac{1}{5}(x-1)^5 + \ldots$

7. $\sum_{n=1}^{\infty} (-1)^{n+1} \frac{x^n}{n}$

8. $1 - 2(x-1) + 3(x-1)^2 - 4(x-1)^3 + 5(x-1)^4 + \ldots$

9. $2 - 2(x-1) + 2(x-1)^2 - 2(x-1)^3 + 2(x-1)^4 + \ldots$

10. $1 - x + \frac{1}{2}x^2 - \frac{1}{6}x^3 + \frac{1}{24}x^4 + \ldots$