1 一元函数微分学的计算

1.1 基本求导公式

1. $(x^a)' = ax^{a-1}$ (a 为常数)
2. $(a^x)' = a^x \ln a \ (a > 0,\ a \neq 1)$
3. $(e^x)' = e^x$
4. $(\log_a x)' = \dfrac{1}{x \ln a} \ (a > 0,\ a \neq 1)$
5. $(\ln |x|)' = \dfrac{1}{x}$
6. 三角函数求导
   - $(\sin x)' = \cos x$
   - $(\cos x)' = -\sin x$
   - $(\tan x)' = \sec^2 x$
   - $(\cot x)' = -\csc^2 x$
   - $(\sec x)' = \sec x \tan x$
   - $(\csc x)' = -\csc x \cot x$
   - $(\arcsin x)' = \dfrac{1}{\sqrt{1-x^2}}$
   - $(\arccos x)' = -\dfrac{1}{\sqrt{1-x^2}}$
   - $(\arctan x)' = \dfrac{1}{1+x^2}$
   - $(x)' = -\dfrac{1}{1+x^2}$
7. $\left[\ln(x + \sqrt{x^2+1})\right]' = \dfrac{1}{\sqrt{x^2+1}}$
8. $\left[\ln(x + \sqrt{x^2-1})\right]' = \dfrac{1}{\sqrt{x^2-1}}$

1.2 四则运算

1. $(u \pm v)' = u' \pm v'$
2. $(uv)' = u'v + uv'$
3. $\left(\dfrac{u}{v}\right)' = \dfrac{u'v - uv'}{v^2} \qquad (v \neq 0)$

1.3　基础概念

1.4　结论

1.5　定理

1.6　运算

1.7　公式

1.8　方法总结

1.9　条件转换思路

1.10　理解