

Сайт «Задачи-решение» - это решение контрольных, решение задач по физике, решение задач по математике.

Таблица основных дифференциалов

$$1. dx = \frac{1}{a} d(ax) = \frac{1}{a} d(ax + b), \text{ где } a \text{ и } b \text{ — некоторые числа.}$$

В частности, $dx = \frac{1}{2} d(2x) = \frac{1}{2} d(2x + b) = \frac{1}{3} d(3x) = \frac{1}{3} d(3x + b)$ и так далее.

$$2. x^\alpha dx = \frac{1}{\alpha+1} d(x^{\alpha+1}) = \frac{1}{\alpha+1} d(x^{\alpha+1} + b), \alpha \neq -1.$$

$$\text{В частности, } xdx = \frac{1}{2} d(x^2) = \frac{1}{2} d(x^2 + b) = \frac{1}{2a} d(ax^2 + b),$$

$$x^2 dx = \frac{1}{3} d(x^3) = \frac{1}{3} d(x^3 + b) = \frac{1}{3a} d(ax^3 + b), \frac{dx}{x^2} = -d\left(\frac{1}{x}\right) = -d\left(\frac{1}{x} + b\right),$$

$$\frac{dx}{x^3} = -\frac{1}{2} d\left(\frac{1}{x^2}\right) = -\frac{1}{2} d\left(\frac{1}{x^2} + b\right),$$

$$\frac{dx}{\sqrt{x}} = 2d(\sqrt{x}) = 2d(\sqrt{x} + b).$$

$$3. \frac{dx}{x} = d(\ln x) = d(\ln x + b) = \frac{1}{a} d(a \ln x + b).$$

$$4. e^x dx = d(e^x) = d(e^x + b), e^{\alpha x} dx = \frac{1}{\alpha} d(e^{\alpha x}) = \frac{1}{\alpha} d(e^{\alpha x} + b).$$

$$5. \cos x dx = d \sin x = d(\sin x + b).$$

$$\cos \alpha x dx = \frac{1}{\alpha} d \sin \alpha x = \frac{1}{\alpha \beta} d(\beta \sin \alpha x + b).$$

$$6. \sin x dx = -d \cos x = -d(\cos x + b).$$

$$\sin \alpha x dx = -\frac{1}{\alpha} d \cos \alpha x = -\frac{1}{\alpha \beta} d(\beta \cos \alpha x + b).$$

$$7. \frac{dx}{\cos^2 x} = dtgx = d(\operatorname{tg} x + b).$$

$$\frac{dx}{\cos^2 \alpha x} = \frac{1}{\alpha} dtg \alpha x = \frac{1}{\alpha \beta} d(\beta \operatorname{tg} \alpha x + b).$$

$$8. \frac{dx}{\sin^2 x} = -dctgx = -d(\operatorname{ctg} x + b).$$

$$\frac{dx}{\sin^2 \alpha x} = -\frac{1}{\alpha} dctg \alpha x = -\frac{1}{\alpha \beta} d(\beta \operatorname{ctg} \alpha x + b).$$

$$9. \frac{dx}{1+x^2} = d(\operatorname{arctg} x) = -d(\operatorname{arcctg} x).$$

$$\frac{dx}{1+\alpha^2 x^2} = \frac{1}{\alpha} d(\operatorname{arctg} \alpha x) = \frac{1}{\alpha \beta} d(\beta \operatorname{arctg} \alpha x) = -\frac{1}{\alpha \beta} d(\beta \operatorname{arcctg} \alpha x).$$

$$10. \frac{dx}{\sqrt{1-x^2}} = d(\operatorname{arcsin} x) = -d(\operatorname{arccos} x).$$

$$\frac{dx}{\sqrt{1-\alpha^2 x^2}} = \frac{1}{\alpha} d(\operatorname{arcsin} \alpha x) = \frac{1}{\alpha \beta} d(\beta \operatorname{arcsin} \alpha x) = -\frac{1}{\alpha} d(\operatorname{arccos} \alpha x) = -\frac{1}{\alpha \beta} d(\beta \operatorname{arccos} \alpha x).$$

$$df(x) = \frac{1}{a} d(af(x)) = \frac{1}{a} d(af(x) + b).$$