

Derivujte bez úprav:

$$1. y = \sqrt{3x-1} - e^{2-x} - \sin x^2 + \operatorname{arctg} x - \ln(\cos x) + \frac{1}{\sqrt[3]{x}}$$

$$2. y = \sqrt[4]{3-2x} + 2^{x^2} - \cos(1-x) + \arcsin 2x - \ln(x^2 - x + 5) + \frac{1}{\sqrt{2x}} - 3 \sin(2-x)$$

$$3. y = 3x^2 - 2(x+1)^3 + 3(2-x)^4 + \frac{1}{(x-1)^3} - \frac{2}{\sqrt{2x+3}} + \frac{3}{\sqrt[4]{x+1}}$$

Derivujte a upravte:

$$1. y = \frac{1-x^2}{1+2x}$$

$$2. y = \frac{1-\sqrt{x}}{1+\sqrt{x}}$$

$$3. y = \sin^2 x - 3 \cos^2 x$$

$$4. y = x \cdot 10^x$$

$$5. y = \ln(x + \sqrt{x^2 - 2})$$

$$6. y = \sqrt{9-x^2} - 3 \arcsin \frac{x}{3}$$

$$7. y = x \ln x - x$$

$$8. y = \ln \frac{1}{\sqrt{1-x^4}}$$

$$9. y = \frac{-\cos x}{\sin^2 x}$$

$$10. y = \ln \frac{1 - \sin x}{1 + \sin x}$$

$$11. y = \operatorname{arctg} \frac{x+1}{x-1}$$

Výsledky:

$$1. y' = \frac{3}{2\sqrt{3x-1}} + e^{2-x} - 2x \cos x^2 + \frac{1}{1+x^2} + \frac{\sin x}{\cos x} - \frac{1}{3\sqrt[3]{x^4}}$$
$$2. y' = -\frac{1}{2\sqrt[4]{(3-2x)^3}} + 2^{x^2} \cdot \ln 2 \cdot 2x - \sin(1-x) + \frac{2}{\sqrt{1-4x^2}} - \frac{2x-1}{x^2-x+5} - \frac{1}{\sqrt{8x^3}} + 3 \cos(2-x)$$
$$3. y' = 6x - 6(x+1)^2 - 12(2-x)^3 - \frac{3}{(x-1)^4} + \frac{2}{\sqrt{(2x+3)^3}} - \frac{3}{4\sqrt[4]{(x+1)^5}}$$

$$1. y' = -2\frac{x^2+x+1}{(1+2x)^2}, 2. y' = -\frac{1}{\sqrt{x}(1+\sqrt{x})^2}, 3. y' = 4 \sin 2x, 4. y' = 10^x(1+x \ln 10), 5. y' = \frac{1}{\sqrt{x^2-2}},$$
$$6. y' = -\sqrt{\frac{3+x}{3-x}}, 7. y' = \ln x, 8. y' = \frac{2x^3}{1-x^4}, 9. y' = \frac{1+\cos^2 x}{\sin^3 x}, 10. y' = -\frac{2}{\cos x}, 11. y' = -\frac{1}{x^2+1}$$