$$y' = \frac{\quad}{\sqrt[3]{(x+1)^2}}$$

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7.1.65

$x^3+y^3 = \sin(\cancel{\ } x - 2y) \qquad y' - ?$

$(x^3+y^3)'_x = (\sin(x-2y))'_x$

$3x^2 + 3y^2 \cdot y' = \cos x(x-2y) \cdot (x-2y)'$

$3x^2 + 3y^2 \cdot y' = \cos x(x-2y) \cdot (1-2y')$

$3y^2y' + 2y'\cos(x-2y) = \cos(x-2y) - 3x^2$

$y'(3y^2 + \cos(x-2y)) = \cos(x-2y) - 3x^2$

$$y' = \frac{\cos(x-2y) - 3x^2}{3y^2 + 2\cos(x-2y)}$$

7.1.72 $x = 2\cos t$ $y = 3\sin t$

$$y'(x) = \frac{y'(t)}{x'(t)} = \frac{(3\sin t)'}{(2\cos t)'} = \frac{3\cos t}{-2\sin t} =$$

$$= -1{,}5\, \mathrm{ctg}\, t.$$

7.1.83

$f(x) = \sin 3x$ найти $f'''(x)$

y'' для $y = y(x)$ $x = t^2$ $y = t^3$

$$f'(x) = (\sin 3x)' = \cos 3x \cdot 3x' = 3\cos 3x$$

$$f''(x) = (3\cos 3x)' = 3 \cdot (-\sin 3x) \cdot (3x)' = -9\sin 3x$$

$$f'''(x) = (-9\sin 3x)' = -9 \cdot \cos 3x \cdot 3 =$$

$$= -27\cos 3x$$

$x = t^2$, $y = t^3$, $y = y(x)$, y''_{xx} -?

$$y''_{xx} = \frac{x'_t \cdot y''_{tt} - y'_t \cdot x''_{tt}}{(x'_t)^3} =$$

$$= \frac{(t^2)' \cdot ((t^3)')' - (t^3)' \cdot ((t^2)')'}{((t^2)')^3} =$$

$$= \frac{2t \cdot (3t^2)' - 3t^2 \cdot (2t)'}{(2t)^3} = \frac{2t \cdot 6t - 3t^2 \cdot 2}{8t^3}$$

$$= \frac{12t^2 - 6t^2}{8t^3} = \frac{6t^2}{8t^3} = \frac{3}{4t} =$$