

Lösung A1

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|---|--|
| a) $f'(x) = 2x$ | b) $f'(x) = -\frac{2}{x^2}$ |
| c) $f'(x) = -8x^3 + 6x - 4$ | d) $f'(x) = 2x^3 - 3x^2 + 5x$ |
| e) $f'(x) = \frac{3}{32}x^2 + \frac{3}{2}$ | f) $s'(t) = -\frac{5}{3}t + \frac{2}{3}$ |
| g) $f'(x) = \frac{1}{16}(3x^2 + 1)$ | h) $f'(x) = 3x^2 - 3x - 4$ |
| i) $f'(x) = 4ax^3 + 2bx$ | j) $f'(x) = 3ax^2 + 2bx + c$ |
| k) $f'(x) = 6 - \frac{5}{x^2}$ | l) $f'(x) = 3x^2 - 4x - \frac{1}{x^2}$ |
| m) $f'(x) = 3x^2 - 2 - \frac{1}{x^2}$ | n) $f'(x) = 4x + 3$ |
| o) $f'(x) = -2x + 2$ | p) $f'(x) = 1$ |
| q) $f'(x) = x - \frac{1}{3}$ | r) $f'(x) = 0$ |
| s) $f'(x) = \frac{3}{2}x - \frac{2}{3}$ | t) $f'(x) = 6x^2 - 6x - 4$ |
| u) $f'(x) = -\frac{3}{4}x^2 + \frac{4}{3}x - \frac{3}{4}$ | v) $f'(x) = x + 3$ |

Lösung A2

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|---|---|
| a) $f'(x) = \frac{8}{5}x - \frac{3}{4}$ | b) $f'(x) = -\frac{6}{7}x + \frac{4}{9}$ |
| c) $f'(x) = 3x^2 - 2x + 1$ | d) $f'(x) = -3x^2 + 2x - 1$ |
| e) $f'(x) = -\frac{9}{4}x^2 + 4x - 1$ | f) $f'(x) = -2x^2 + 3x + 2$ |
| g) $f'(x) = 12x^2 + 2\pi x + b$ | h) $f'(x) = 3ax^2 + 2bx + 2$ |
| i) $f'(x) = \frac{3}{\sqrt{2}}x^2 - \frac{2}{\pi}x + a$ | j) $f'(x) = \frac{12}{5}x^2 - \frac{3}{2}x + 4$ |
| k) $f'(x) = 4x^3 - 4x + 3$ | l) $f'(x) = 10x^4 + 9x^2 - 4x$ |
| m) $f'(x) = 2x^3 + x - 1$ | n) $f'(x) = -x^3 + x^2 - x$ |
| o) $f'(x) = 5x^4 - 8x^3 + 2x$ | p) $f'(x) = 3x^3 + \frac{10}{7}x$ |
| q) $f'(x) = 0$ | r) $f'(x) = 0$ |
| s) $f'(x) = 12x^5 - 16x^3 + 4x$ | t) $f'(x) = \frac{9}{4}x^2 + \frac{4}{3}x - 1$ |
| u) $f'(x) = \frac{9}{4}x^2 + 3x + \sqrt{2}$ | v) $f'(x) = 3\sqrt{3}x^2 - 2\sqrt{2}x$ |

Lösung A3

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|--|---------------------------------|
| a) $f'(x) = \frac{4}{\pi}x^2 + \frac{2}{3}x$ | b) $f'(x) = 7x - 1,5$ |
| c) $f'(x) = x - 2,5$ | d) $f'(x) = 6,2x + \frac{7}{2}$ |
| e) $f'(x) = 4,5x^2 + 5x$ | f) $f'(x) = -7,5x^2 + 3x$ |
| g) $f'(x) = 3t \cdot x^2 + 4x - 4$ | h) $f'(x) = 14,4x - 8,2$ |

Level 1 – Grundlagen – Blatt 3

i) $f'(x) = -3x^2 + 22x - 24$

j) $f'(x) = \frac{1}{2}(4x^3 - 8x)$

k) $f_t'(x) = 2x^3 - 6tx^2$

l) $f_k'(x) = \frac{3}{k}x^2 + 2kx + k + 1$

m) $f_a'(x) = \frac{3}{4}x^2 + 2ax + a - \frac{1}{2}$

n) $f_t'(x) = \frac{1}{2t}(4x^3 - 4tx)$

o) $f'(t) = 15t^2 - 2$

p) $f'(z) = -4,5z^2 + 5z$

q) $A'(u) = u + 5$

r) $A'(u) = \frac{3}{2}u^2 + \frac{1}{2}$

Lösung A4

a) $f'(x) = 6x$ $f'(-3) = 6 \cdot (-3) = -18$

Nullstellen: $f(x) = 0$

$$2x^2 - 5 = 0$$

$$x^2 = 2,5 \quad | \quad \sqrt{}$$

$$x_{1,2} = \pm\sqrt{2,5}$$

$$f'(\sqrt{2,5}) = 6 \cdot \sqrt{2,5}$$

$$f'(-\sqrt{2,5}) = -6 \cdot \sqrt{2,5}$$

Schnittpunkt mit der y-Achse: $f(0) = -5$; $S_y(0| -5)$

$$f'(0) = 0$$

b) $f'(x) = 4 + \frac{1}{x^2}$ $f'(-3) = 4 + \frac{1}{9} = \frac{37}{9}$

Nullstellen: $f(x) = 0$

$$4x - \frac{1}{x} = 0$$

$$4x^2 - 1 = 0$$

$$x^2 = \frac{1}{4} \quad | \quad \sqrt{}$$

$$x_{1,2} = \pm\frac{1}{2}$$

$$f'\left(\frac{1}{2}\right) = 4 + \frac{1}{\frac{1}{4}} = 8$$

$$f'\left(-\frac{1}{2}\right) = 4 + \frac{1}{\frac{1}{4}} = 8$$

Schnittpunkt mit der y-Achse: $f(0)$ kann nicht gebildet werden wegen $\frac{1}{x^2}$.