

# 1 Aufgaben

Gib die ersten zwei Ableitungen der folgenden Funktionen an:

a)  $f(x) = x + \sin(x)$

b)  $f(x) = 3x - \cos(x)$

c)  $f(x) = x^2 \cos(x)$

d)  $f(x) = 3x^3 + \sin(x)$

e)  $f(x) = 2x + \sin(2x)$

f)  $f(x) = x^2 - \cos(3x)$

## 2 Lösungen

a)

$$f(x) = x + \sin(x)$$

$$f'(x) = 1 + \cos(x)$$

$$f''(x) = -\sin(x)$$

b)

$$f(x) = 3x - \cos(x)$$

$$f'(x) = 3 + \sin(x)$$

$$f''(x) = \cos(x)$$

c)

$$f(x) = x^2 \cos(x)$$

$$f'(x) = 2x - \sin(x)$$

$$f''(x) = 2 - \cos(x)$$

d)

$$f(x) = 3x^3 + \sin(x)$$

$$f'(x) = 9x^2 + \cos(x)$$

$$f''(x) = 18x - \sin(x)$$

e)

$$f(x) = 2x + \sin(2x)$$

$$f'(x) = 2 + 2 \cdot \cos(2x)$$

$$f''(x) = 2 \cdot (2 \cdot (-\sin(2x)))$$

$$f''(x) = -4 \sin(2x)$$

f)

$$f(x) = x^2 - \cos(3x)$$

$$f'(x) = 2x - 3 \sin(3x)$$

$$f''(x) = 2 - 3 \cdot (3 \cos(3x))$$

$$f''(x) = 2 - 9 \cos(3x)$$

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Quelle: Ableitungen