

0.0.1 35. Hausaufgabe

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Berechne $f'(1)$:

a) $f(x) = x^3 - 3\sqrt{x} - \frac{4}{x};$
 $\Rightarrow f'(x) = 3x^2 - \frac{3}{2\sqrt{x}} + \frac{4}{x^2};$
 $\Rightarrow f'(1) = 3 - \frac{3}{2} + 4 = \frac{11}{2};$

b) $f(x) = \left(\sqrt{x} - \frac{1}{\sqrt{x}}\right)^2 = x - 2 + \frac{1}{x};$
 $\Rightarrow f'(x) = 1 - 0 - \frac{1}{x^2};$
 $\Rightarrow f'(1) = 1 - 1 = 0;$

c) $f(x) = \frac{x^3+x^2+1}{x} = x^2 + x + \frac{1}{x};$
 $\Rightarrow f'(x) = 2x + 1 - \frac{1}{x^2};$
 $\Rightarrow f'(1) = 2 + 1 - 1 = 2;$