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## **Opgave 327**

Opgave a

$$f(x) = (7 + 3x^2)^5$$

$$f_1(x) = 7 + 3x^2$$

$$f_1'(x) = 6x$$

$$f_2(x) = f_1(x)^5$$

$$f_2'(x) = 5 \cdot f_1(x)^4$$

$$f'(x) = 5 \cdot (7 + 3x^2)^4 \cdot 6x$$

Opgave b

$$f(x) = (2 + 4x^2 - 9x^3)^4$$

$$f_1(x) = 2 + 4x^2 - 9x^3$$

$$f_1'(x) = 8x - 27x^2$$

$$f_2'(x) = f_1(x)^4$$

$$f_2'(x) = 4 \cdot f_1(x)^3$$

$$f'(x) = 4 \cdot (2 + 4x^2 - 9x^3)^3 \cdot (8x - 27x^2)$$

Opgave c

$$f(x) = \frac{1}{(5x - 3)^3}$$

$$f(x) = (5x - 3)^{3 \cdot (-1)}$$

$$f(x) = (5x - 3)^{-3}$$

$$f_1(x) = 5x - 3$$

$$f_1'(x) = 5$$

$$f_2(x) = f_1(x)^{-3}$$

$$f_2'(x) = -3 \cdot f_1(x)^{-4}$$

$$f'(x) = -3x \cdot (5x - 3)^{-4} \cdot 5$$

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Opgave d

$$y = \frac{5}{\sqrt{3-x}}$$

$$y = \frac{5}{1} \cdot \frac{1}{\sqrt{3-x}}$$

$$y = \frac{5}{1} \cdot \frac{1}{(3-x)^{0.5}}$$

$$y = \frac{5}{1} \cdot (3-x)^{-0.5}$$

$$u = 3 - x$$

$$u' = -1$$

$$z = \frac{5}{1} \cdot u^{-0.5}$$

$$z' = -0.5 \cdot \frac{5}{1} \cdot u^{-1.5}$$

$$z' = -2,5 \cdot u^{-1,5}$$

$$y' = -2.5 \cdot (3-x)^{-1.5} \cdot (-1)$$