Oefeningen niveau 2

Oefening 1. Bereken de afgeleide

1. $\frac{\mathrm{d}}{\mathrm{d}x}\left(e^{3x}\right) = 3e^{3x}$
2. $\frac{\mathrm{d}}{\mathrm{d}x}\left(e^{-2x}\right) = -2e^{-2x}$
3. $\frac{\mathrm{d}}{\mathrm{d}x}\left(e^{x^3}\right) = 3x^2e^{x^3}$
4. $\frac{\mathrm{d}}{\mathrm{d}x}\left(xe^{x^2}\right) = e^{x^2}(1+2x^2)$
5. $\frac{\mathrm{d}}{\mathrm{d}x}\left(x^3e^{x}\right) = e^{x}x^2(3+x)$
6. $\frac{\mathrm{d}}{\mathrm{d}x}\left(e^{3x+5}\right) = 3e^{3x+5}$
7. $\frac{\mathrm{d}}{\mathrm{d}x}\left(e^{x}+e^{-x}\right) = e^{x}-e^{-x}$
8. $\frac{\mathrm{d}}{\mathrm{d}x}\left(e^{\sin(2x)}\right) = 2\cos(2x)e^{\sin(2x)}$
9. $\frac{\mathrm{d}}{\mathrm{d}x}\left(e^{\cos(3x)}\right) = -3\sin(3x)e^{\cos(3x)}$
10. $\frac{\mathrm{d}}{\mathrm{d}x}\left(e^{x^4+x}\right) = (4x^3+1)e^{x^4+x}$

Oefening 2. Bereken de afgeleide

1. $\frac{\mathrm{d}}{\mathrm{d}x}\left(e^{x}\cdot e^{x}\right) = 2e^{x}e^{x}$
2. $\frac{\mathrm{d}}{\mathrm{d}x}\left(e^{x+e^{x}}\right) = (1+e^{x})e^{x+e^{x}}$
3. $\frac{\mathrm{d}}{\mathrm{d}x}\left(xe^{x^3}\right) = e^{x^3}(1+3x^3)$
4. $\frac{\mathrm{d}}{\mathrm{d}x}\left(e^{x^2+4x}\right) = (2x+4)e^{x^2+4x}$
5. $\frac{\mathrm{d}}{\mathrm{d}x}\left(xe^{2x}\right) = e^{2x}(1+2x)$
6. $\frac{\mathrm{d}}{\mathrm{d}x}\left(e^{\tan x}\right) = \sec^2 x\cdot e^{\tan x}$
7. $\frac{\mathrm{d}}{\mathrm{d}x}\left(e^{\ln x}\right) = \frac{1}{x}e^{\ln x}$
8. $\frac{\mathrm{d}}{\mathrm{d}x}\left(e^{x^3+x^2}\right) = (3x^2+2x)e^{x^3+x^2}$
9. $\frac{\mathrm{d}}{\mathrm{d}x}\left(x^2e^{x^2}\right) = e^{x^2}x(2+x^2)$
10. $\frac{\mathrm{d}}{\mathrm{d}x}\left(xe^{x+1}\right) = e^{x+1}(1+x)$

Oefening 3. Bereken de afgeleide

1. $e^{\cos^2 x} = -2\sin x\cos x e^{\cos^2 x}$
2. $e^{\sin^2 x} = 2\sin x\cos x e^{\sin^2 x}$
3. $e^{x+e^{x}} = (1+e^{x})e^{x+e^{x}}$
4. $x^3e^{x^2} = e^{x^2}x^2(3+2x^2)$
5. $e^{\tan^2 x} = 2\tan x\sec^2 x e^{\tan^2 x}$
6. $xe^{x^4} = e^{x^4}(1+4x^4)$
7. $e^{\ln(x^2)} = \frac{2}{x}e^{\ln(x^2)}$
8. $e^{\cos(x^2)} = -2x\sin(x^2)e^{\cos(x^2)}$
9. $e^{x+e^{x^2}} = (1+2xe^{x^2})e^{x+e^{x^2}}$
10. $e^{\sin(x^3)} = 3x^2\cos(x^3)e^{\sin(x^3)}$