

1. Differentiate the following using the chain rule.

(a) e^{1-x^2}

(b) e^{3x^3-7x+1}

Solutions:

(a) Let $y = e^{1-x^2}$, and $u = 1 - x^2$. We now have $y = e^u$. Using the formula for the chain rule, $\frac{dy}{dx} = \frac{dy}{du} \cdot \frac{du}{dx}$, we need to get expressions for $\frac{dy}{du}$ and $\frac{du}{dx}$.

$$\begin{aligned}\frac{dy}{du} &= e^u \\ \frac{du}{dx} &= -2x\end{aligned}$$