

Let $y = f(u)$, $u = g(x)$. Then:

$$\frac{dy}{dx} = \frac{dy}{du} \cdot \frac{du}{dx} \quad \text{or} \quad y' = f'(g(x))g'(x)$$

$$1) \frac{d}{dx} [3x+2]^4 = 12[3x+2]^3$$

$$2) \frac{d}{dx} [2x-3]^5 = 10[2x-3]^4$$

$$3) \frac{d}{dx} [1-4x]^7 = -28[1-4x]^6$$

$$4) \frac{d}{dx} [2+9x]^5 = 45[2+9x]^4$$

$$5) \frac{d}{dx} [3+x^2]^5 = 10x[3+x^2]^4$$

$$6) \frac{d}{dx} [1-x^2]^8 = -24x^2[1-x^2]^7$$

$$7) \frac{d}{dx} [2x+1]^6 = 12[2x+1]^5$$

$$8) \frac{d}{dx} [x^2+5]^{10} = 20x[x^2+5]^9$$

$$9) \frac{d}{dx} [1+3x]^{-3} = -9[1+3x]^{-4}$$

$$10) \frac{d}{dx} [1-4x^2]^{-1} = 8x[1-4x^2]^{-2}$$

$$11) \frac{d}{dx} [5x-3]^{\frac{1}{2}} = \frac{5}{2}[5x-3]^{-\frac{1}{2}}$$

$$12) \frac{d}{dx} [x^2+1]^{-\frac{3}{2}} = -5x[x^2+1]^{-\frac{5}{2}}$$