

Brief answer to selected problems in HW04

1. Hw04: Problem 2

$$\frac{d}{dx}f(g(2)) = f'(g(2))g'(2) = 4 \times 0.1 = 0.4$$

2. Section 3.7: Problem 42.

Using implicit differentiation to get

$$\frac{dy}{dx} = \frac{y+2}{1-x}$$

And normal parallel to the line $2x + y = 0$ lead us to solve the equations

$$\begin{cases} \frac{y+2}{1-x} = \frac{1}{2} \\ xy + 2x - y = 0 \end{cases}$$

3. Section 3.7: Problem 48.

Implicit differentiation gives us

$$qy^{q-1}\frac{dy}{dx} = px^{p-1}$$

By using $y = x^{\frac{p}{q}}$ to express $\frac{dy}{dx}$ leads to the result.