

Quiz 6 solutions—version B

Name _____

Student ID Number _____

1. Differentiate the following functions of x

(a)

$$(\cos x)^{x^2}$$

$$(\cos x)^{x^2} (2x \ln \cos x - x^2 \tan x)$$

(b)

$$(\sinh x)(\cosh x)$$

$$\sinh^2 x + \cosh^2 x$$

2. Find a formula for $\left(\frac{d}{dx}\right)^n e^{ax}$, where a is a constant.

$$a^n e^{ax}$$

3. If P , Q and R are functions of t that satisfy the equation $PQR = 10$, find R and R' when $P = 5$, $Q = 1$, $P' = -5$, $Q' = 3$.

Use $PQR = 10$ to find $R = 2$.

Then use $P'QR + PQ'R + PQR' = 0$ to find $R' = -4$.