Quiz 1

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Differential

Equations

Q1. Solve the initial value problem

where

Solution:

Solving for the left side:

Solving for the partial fractions:

Solving for A, B and C:

Simplifying the left side:

(Simplified the equation log(a) + log(b) = log(a\*b))

Solving for the right side:

Solving for y:

(In a neighborhood around y, y is positive)

(Hence, the absolute value of (y^2 -4) and y are not needed)

(Multiplied both sides by 8)

(log(a) - log(b)) = log(a/b))

Solving for c:

(Substituted y for 3 and x for 0)

(Took the reciprocal of both sides)

Answer:

Q2. Find the explicit solution to the initial value problem

where

Solution:

(Separated the functions)

Solving for the left side:

Solving for the right side:

(Adding the other part: )

Solving for y:

Solving for c:

(Substituted y for and x for 0)

(Squared both sides and took both sides to power of e)

Answer:

Q3. Find the general explicit solution to

Solution:

(Converting to standard form: )

Solving :

Setting up the problem:

()

Solving for the right side:

)

Solving for y:

Q4. Find the general explicit solution to

Solution:

(Converting to standard form: )

Solving for

Setting up the problem:

()

Solving for the right side:

Solving for y: