**Expert ID/Name: Nstructive**

**Date: 06-Nov-2020**

**C:\Users\chari\Desktop\40.PNG**

**Answer:**

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| **Section 1:** Algorithm/Theorem Reminder / A tip for solving these type of questions |
| Tips:   1. Equation of family of all circles of radius is . Here, are arbitrary constants. 2. Differentiate with respect to “x” on both sides. 3. If an equation has “n” number of arbitrary constants then we need to do differentiation in “n” number of times. |

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| **Section 2:** Step-by-step answer |
| Given: Equation of family of all circles of radius is  To find: Differential Equation of family of all circles of radius is  Explanation:  Step 1:   |  |  | | --- | --- | | Instruction | Differentiate  with respect to “x” on both sides. | | Calculation | Again differentiate with respect to “x” on both sides |   Step 2:   |  |  | | --- | --- | | Instruction | Put the value of  in equation in | | Calculation |  | |

Step 3:

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| Instruction | Now, Put and values in |
| Calculation | Which is the required differential equation. |

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| **Section 3**  Conclusion**:** Differential equation of family of all the circles  is . |
| Final answer: |