**Expert ID/Name: Nstructive**

**Date: 06-Nov-2020**

**C:\Users\chari\Desktop\41.PNG**

**Answer:**

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| **Section 1:** Algorithm/Theorem Reminder / A tip for solving these type of questions |
| Tips:  Equation of family of ellipses having foci on Y-axis and the centre at the origin is , . Here, are arbitrary constants.   1. Differentiate with respect to “x” on both sides. 2. 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 ellipses having foci on Y-axis and the centre at the origin.  To find\determine\prove: Form the differential equation of Equation of family of ellipses having foci on Y-axis and the centre at the origin.  Explanation:  Step 1:   |  |  | | --- | --- | | Instruction | Recall Equation of family of ellipses having foci on Y-axis and the centre at the origin. | | Calculation | C:\Users\chari\Desktop\40a.PNG  Equation of family of ellipses having foci on Y-axis and the centre at the origin is , . Here, are arbitrary constants. |   Step 2:   |  |  | | --- | --- | | Instruction | Differentiate  with respect to “x” on both sides. | | Calculation |  |   Step 3:   |  |  | | --- | --- | | Instruction | Differentiate with respect to “x” on both sides and apply the formulae, | | Calculation |  | |

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