**Expert ID/Name: Nstructive**

**Date: 06-Nov-2020**

**C:\Users\chari\Desktop\37.PNG**

**Answer:**

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| **Section 1:** Algorithm/Theorem Reminder / A tip for solving these type of questions |

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| Tip:   1. Equation of the family of Parabolas having vertex at the origin and axis along the positive direction of Y-axis is , where a is arbitrary constant and focus of the parabola is . 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. |

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| Given: Equation of the family of Parabolas having vertex at the origin and axis along the positive direction of Y-axis.  To find\determine\prove: Form the differential equation of Equation of the family of Parabolas having vertex at the origin and axis along the positive direction of Y-axis  Explanation:  Step1:   |  |  | | --- | --- | | Instruction | Recall the Equation of the family of Parabolas having vertex at the origin and axis along the positive direction of Y-axis. | | Calculation | C:\Users\chari\Desktop\37a.PNG  Equation of the family of Parabolas having vertex at the origin and axis along the positive direction of Y-axis is, where a is arbitrary constant and focus of the parabola is . |   Step 2:   |  |  | | --- | --- | | Instruction | Differentiate the differential equation with respect to “ ”. | | Calculation |  |   Step 3:   |  |  | | --- | --- | | Instruction | Substitute  in. | | Calculation |  | |
| Conclusion:  The differential equation of  is.  Hence, verified. |