({{question\_number}}) The total value of the sales made by a new company in the first years of its existence is denoted by . A model is proposed in which the rate of increase of is proportional to the square root of . The constant of proportionality is .

**(i)** Express the model as a differential equation.

Verify by differentiation that, where is an arbitrary constant, satisfies this differential equation. **[4]**

**(ii)** The value of the company’s sales in its first year is , and the total value of the sales in the first two years is. Find in terms of . **[4]**