

$$\int \frac{\ln(1+\sqrt{x})}{\sqrt{x}} dx$$

INT-S1-029

SOSTITUZIONE

$$1+\sqrt{x} = z$$

$$z' = \frac{dz}{dx} = \frac{1}{2\sqrt{x}}$$

$$dx = 2\sqrt{x} dz$$

$$dx = 2(z-1) dz$$

$$= \int \frac{\ln z}{\cancel{z-1}} 2(\cancel{z-1}) dz =$$

$$= 2 \int \ln z dz =$$

PER PARTI

$$= 2 \int 1 \cdot \ln z dz =$$

$$= 2 \left\{ [1] \ln z - \int [1] [D \ln z] dz \right\}$$

$$= 2z \ln z - 2 \int \cancel{z} \frac{1}{\cancel{z}} dz =$$

$$= 2z \ln z - 2z =$$

$$= \boxed{2(1+\sqrt{x}) \ln(1+\sqrt{x}) - 2(1+\sqrt{x}) + K}$$