PROOF OF FORMULA 4.267.11

$$\int_0^1 (x^p - x^q) x^{r-1} \frac{dx}{\ln x} = \ln \left(\frac{p+r}{q+r} \right)$$

Write the integral as
$$\int_0^1 (x^p - x^q) x^{r-1} \frac{dx}{\ln x} = \int_0^1 \frac{x^{p+r-1} - x^{q+r-1}}{\ln x} dx$$
and now the result follows from entry 4.267.8.