1b) QUEREMOS:

$$\int x^{\alpha}\sqrt{x^2-b^2}^{\beta}dx$$

$$= w\int u^{\alpha}\sqrt{u^2-1}^{\beta}du$$

TEMOS:

$$\int x^{\alpha}\sqrt{x^2-b^2}^{\beta}dx$$

$$= \int x^{\alpha}\sqrt{b^2\left(\left(\frac{x}{b}\right)^2-1\right)}^{\beta}dx$$

$$= \int x^{\alpha}\left(b\sqrt{\left(\frac{x}{b}\right)^2-1}\right)^{\beta}dx$$

$$= b^{\beta}\int x^{\alpha}\sqrt{\left(\frac{x}{b}\right)^2-1}^{\beta}dx \qquad \left[\begin{array}{l} u=\frac{x}{b} \\ bu=x \\ b\,du=dx \end{array}\right]$$

$$= b^{\beta}\int (bu)^{\alpha}\sqrt{u^2-1}^{\beta}b\,du$$

$$= b^{\beta}\cdot b^{\alpha}\cdot b\int u^{\alpha}\sqrt{u^2-1}^{\beta}du$$

ENTÃO:

$$[1B] = \left(\begin{array}{ll} \int x^{\alpha}\sqrt{x^2-b^2}^{\beta}dx & \left[u=\frac{x}{b}\right] \\ = b^{\alpha+\beta+1}\int u^{\alpha}\sqrt{u^2-1}^{\beta}du & \end{array}\right)$$