1c) QUEREMOS:

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

$$= z\int u^{\alpha}\sqrt{u^2-1}\,du$$

TEMOS:

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

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

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

$$= b^{\beta}\int\left(\frac{b}{a}u\right)^{\alpha}\sqrt{u^2-1}^{\beta}\cdot\frac{b}{a}du$$

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

ENTÃO:

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