5.14   En utilisant tour à tour les exercices 5.13 et 5.11, on trouve :

$$\varphi(n) = \varphi(p_1^{\alpha_1}\, p_2^{\alpha_2}\, \ldots\, p_k^{\alpha_k})$$

$$= \varphi(p_1^{\alpha_1})\, \varphi(p_2^{\alpha_2})\, \ldots\, \varphi(p_k^{\alpha_k})$$

$$= p_1^{\alpha_1} \left(1 - \tfrac{1}{p_1}\right) p_2^{\alpha_2} \left(1 - \tfrac{1}{p_2}\right) \ldots p_k^{\alpha_k} \left(1 - \tfrac{1}{p_k}\right)$$

$$= p_1^{\alpha_1}\, p_2^{\alpha_2}\, \ldots\, p_k^{\alpha_k} \left(1 - \tfrac{1}{p_1}\right) \left(1 - \tfrac{1}{p_2}\right) \ldots \left(1 - \tfrac{1}{p_k}\right)$$

$$= n \left(1 - \tfrac{1}{p_1}\right) \left(1 - \tfrac{1}{p_2}\right) \ldots \left(1 - \tfrac{1}{p_k}\right)$$