Solving Square–Root Palindromes II

$$\text{Solve}\left[n + x == 2n + \cfrac{1}{a + \cfrac{1}{b + \cfrac{1}{c + \cfrac{1}{b + \cfrac{1}{a + \cfrac{1}{n+x}}}}}}, x\right]$$

Figure 1. Continued Fraction for Palindrome *a*, *b*, *c*, *b*, *a*

$$\left\{\left\{x \to -\sqrt{\frac{(2b + b^2 c + 2n + 4abn + 2bcn + 2ab^2 cn + 2an^2 + 2a^2 bn^2 + cn^2 + 2abcn^2 + a^2 b^2 cn^2)}{(2a + 2a^2 b + c + 2abc + a^2 b^2 c)}}\right\},\right.$$
$$\left.\left\{x \to \sqrt{\frac{(2b + b^2 c + 2n + 4abn + 2bcn + 2ab^2 cn + 2an^2 + 2a^2 bn^2 + cn^2 + 2abcn^2 + a^2 b^2 cn^2)}{(2a + 2a^2 b + c + 2abc + a^2 b^2 c)}}\right\}\right\}$$

Figure 2. Solution for *a*, *b*, *c*, *b*, *a*

$$\text{Solve}\left[n + x == 2n + \cfrac{1}{a + \cfrac{1}{b + \cfrac{1}{c + \cfrac{1}{d + \cfrac{1}{c + \cfrac{1}{b + \cfrac{1}{a + \cfrac{1}{n+x}}}}}}}}, x\right]$$

$$\left\{\left\{x \to -\sqrt{\frac{(2b + 2b^2 c + d + 2bcd + b^2 c^2 d + 2n + 4abn + 4bcn + 4ab^2 cn + 2adn + 2cdn + 4abcdn + 2bc^2 dn + 2ab^2 c^2 dn + 2an^2 + 2a^2 bn^2 + 2cn^2 + 4abcn^2 + 2a^2 b^2 cn^2 + a^2 dn^2 + 2acdn^2 + 2a^2 bcdn^2 + c^2 dn^2 + 2abc^2 dn^2 + a^2 b^2 c^2 dn^2)}{(2a + 2a^2 b + 2c + 4abc + 2a^2 b^2 c + a^2 d + 2acd + 2a^2 bcd + c^2 d + 2abc^2 d + a^2 b^2 c^2 d)}}\right\},\right.$$
$$\left.\left\{x \to \sqrt{\frac{(2b + 2b^2 c + d + 2bcd + b^2 c^2 d + 2n + 4abn + 4bcn + 4ab^2 cn + 2adn + 2cdn + 4abcdn + 2bc^2 dn + 2ab^2 c^2 dn + 2an^2 + 2a^2 bn^2 + 2cn^2 + 4abcn^2 + 2a^2 b^2 cn^2 + a^2 dn^2 + 2acdn^2 + 2a^2 bcdn^2 + c^2 dn^2 + 2abc^2 dn^2 + a^2 b^2 c^2 dn^2)}{(2a + 2a^2 b + 2c + 4abc + 2a^2 b^2 c + a^2 d + 2acd + 2a^2 bcd + c^2 d + 2abc^2 d + a^2 b^2 c^2 d)}}\right\}\right\}$$

Figure 4. Continued Fraction for *a*, *b*, *c*, *d*, *c*, *b*, *a*

$$\text{Solve}\left[n + x == 2n + \cfrac{1}{2 + \cfrac{1}{1 + \cfrac{1}{c + \cfrac{1}{1 + \cfrac{1}{2 + \cfrac{1}{n+x}}}}}}, x\right]$$

$$\left\{\left\{x \to -\sqrt{\frac{2 + c + 10n + 6cn + 12n^2 + 9cn^2}{12 + 9c}}\right\},\right.$$
$$\left.\left\{x \to \sqrt{\frac{2 + c + 10n + 6cn + 12n^2 + 9cn^2}{12 + 9c}}\right\}\right\}$$

Figure 5. Continued Fraction for 2,1 *c*, 1, 2