

Corrigé

1. $u_0 = 2; u_1 = 2u_0 + 1 = 2 \times 2 + 1 = 5$
 $u_2 = 2u_1 + 1 = 2 \times 5 + 1 = 11; u_3 = 2u_2 + 1 = 2 \times 11 + 1 = 23$

$$u_4 = 2u_3 + 1 = 2 \times 23 + 1 = 47$$

2. $u_0 = 1; u_1 = u_0^2 + 1 = 1^2 + 1 = 2$
 $u_2 = u_1^2 + 1 = 2^2 + 1 = 5; u_3 = u_2^2 + 1 = 5^2 + 1 = 26$
 $u_4 = u_3^2 + 1 = 26^2 + 1 = 677$

3. $u_1 = 1; u_2 = \frac{1}{u_1 + 2} = \frac{1}{1 + 2} = \frac{1}{3}$

$$u_3 = \frac{1}{u_2 + 2} = \frac{1}{\frac{1}{3} + 2} = \frac{3}{7}; u_4 = \frac{1}{u_3 + 2} = \frac{1}{\frac{3}{7} + 2} = \frac{7}{17}$$

$$u_5 = \frac{1}{u_4 + 2} = \frac{1}{\frac{7}{17} + 2} = \frac{17}{41}$$

4. $u_0 = 1; u_1 = \sqrt{u_0^2 + 1} = \sqrt{1^2 + 1} = \sqrt{2}$

$$u_2 = \sqrt{u_1^2 + 1} = \sqrt{(\sqrt{2})^2 + 1} = \sqrt{3}; u_3 = \sqrt{u_2^2 + 1} = \sqrt{(\sqrt{3})^2 + 1} = \sqrt{4} = 2$$

$$u_4 = \sqrt{u_3^2 + 1} = \sqrt{2^2 + 1} = \sqrt{5}$$