

MATH336 - HW #11

1. ✓

2. substituting z for any 2 terms: $\frac{z}{2} = \frac{1+2z+3z+4z}{2+3z+4z+5z} = \frac{1+9z}{2+12z}$

$12z^2 - 7z - 1 = 0$, $\frac{7 \pm \sqrt{49 - 4(12)(-1)}}{2(12)} = \frac{7 \pm \sqrt{97}}{24}$

potential SS = $\frac{7+\sqrt{97}}{24}, \frac{7-\sqrt{97}}{24}$

3.

$\vec{x}(n) = [a(n+2), a(n+1), a(n)]$
 $\quad \quad \quad x_1 \quad \quad x_2 \quad \quad x_3$

$\vec{F}([x_1, x_2, x_3]) = \left[\frac{1+2x_1+3x_2+4x_3}{2+3x_1+4x_2+5x_3}, x_1, x_2 \right]$

$\vec{x}(n+1) = \vec{F}(\vec{x}(n))$

4.

$SS = \left[\frac{r+5}{12}, \frac{\sqrt{r^2+10r+1}}{12}, \frac{r+5}{12} - \frac{\sqrt{r^2+10r+1}}{12} \right]$

$r_0 \approx 3.44$

4'. $r_0 = 3.4305008735$

5.

i. $r_1 \approx 3.449$

ii. $r_2 \approx 3.544$

iii. $r_3 \approx 3.564$