MATH 327 HOMEWORK #5

Problem 0.1. Do problem §5.2 #14.

Problem 0.2. Do problem §5.2 #38.

Problem 0.3. Find the general solution to

$$a_n = 5a_{n-1} - 8a_{n-2} + 4a_{n-3}$$

Problem 0.4. Since

$$a_n = a_{n-1} - 4a_{n-2} + 4a_{n-3}$$

has a characteristic polynomial with roots 1,$2\sqrt{-1}$ and $-2\sqrt{-1}$ you can solve this using complex numbers. However, the general solution can also be expressed as

$$a_n = A + B2^n \sin(\frac{\pi n}{2}) + C2^n \cos(\frac{\pi n}{2}).$$

Find the particular solution that satisfies the initial conditions

$$a_0 = 1 \quad a_1 = 4 \quad a_2 = 6.$$

Problem 0.5. Find a closed form solution to

$$\begin{aligned} a_0 &= 5 \\ a_1 &= 7 \\ a_n &= 3a_{n-1} - 2a_{n-2} \quad (n \geq 2) \end{aligned}$$

Problem 0.6. Find the general sol

Problem 0.7. Find a closed form solution to

$$\begin{aligned} a_0 &= 2 \\ a_1 &= 5 \\ a_n &= 3a_{n-1} - 2a_{n-2} - 2 \quad (n \geq 2) \end{aligned}$$