Math 177 Homework 5

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Section 6.1

1. $P = 10(1.15^{-1} + 1.10^{-2}) + 110 * 1.05^{-3} = \boxed{111.98}$
   $P = 10[(1+j)^{-1} + (1+j)^{-2}] + 110(1+j)^{-3} \implies \boxed{j = 0.0555424}$
2. $P = 5(1.10^{-1} + 1.10^{-2} + 1.12^{-3}) + 105 * 1.12^{-4} = \boxed{78.97}$
3. (a) (i) $P = 5(1.0375^{-1} + 1.03875^{-2} + 1.04^{-3} + 1.04^{-4} + 1.04125^{-5}) + 105 * 1.0425^{-6} = \boxed{104.05}$
   (ii) $P = 5(1.07^{-1} + 1.06875^{-2} + 1.0675^{-3} + 1.06625^{-4} + 1.065^{-5}) + 105 * 1.06375^{-6} = \boxed{93.15}$
   (iii) $P = 5(1.06^{-1} + 1.06^{-2} + 1.06^{-3} + 1.06^{-4} + 1.06^{-5}) + 105 * 1.06^{-6} = \boxed{95.08}$

   (b)
4. (a) Bond 1: $85.12 = 2\sum_{n=1}^{19}(1+j)^{-n} + 102(1+j)^{-20}$
   Bond 2: $133.34 = 5\sum_{n=1}^{19}(1+j)^{-n} + 105(1+j)^{-20}$
   $\implies 5 * 85.12 - 2 * 133.34 = (5 * 102 - 2 * 105)(1+j)^{-20}$
   $\implies 158.92 = 300(1+j)^{-20}$
   $\implies \boxed{j = 0.0322791}$ (6.46% nominal annual rate)

   (b)
5.
6.

Section 6.3

1.
3.
4.
5.
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7.

Section 6.4

3.