

FMN011 Exercises Chapters 10 & 11

Week 19

Answers for odd numbered problems are given in the book. Relevant answers for even numbered problems are given here in parenthesis.

10.3 E: 1, 2 ((a) $P(t) = \sin 2\pi t$, (b) $P(t) = \cos 2\pi t + \sin 2\pi t$, (c) $P(t) = 0$, (d) $P(t) = 1$)

C: 1b, 1d, 4, 5 (<http://www.wunderground.com/history/>)

11.1 E: 2 ($P(t) = (x_0+x_1)/2$), 3a, 4a $\left(P(t) = \frac{1}{2} + \frac{\sqrt{2+\sqrt{2}} - \sqrt{2-\sqrt{2}}}{2} \cos \frac{(2t+1)\pi}{8} \right)$

C: 1a, 3a

11.2 E: 2c $\left(\left(\begin{array}{cccc} 1 & 0 & -1 & 0 \\ 0 & 0 & 0 & 0 \\ -1 & 0 & 1 & 0 \\ 0 & 0 & 0 & 0 \end{array} \right) \right)$,

$$P(s, t) = \frac{1}{4} - \frac{1}{2\sqrt{2}} \cos \frac{2(2s+1)\pi}{8} - \frac{1}{2\sqrt{2}} \cos \frac{2(2t+1)\pi}{8} + \frac{1}{2} \cos \frac{2(2s+1)\pi}{8} \cos \frac{2(2t+1)\pi}{8}$$

3c
 C: 2a $\left(\left(\begin{array}{cccc} -1.7714 & 2.8018 & -2.8018 & 1.7714 \\ -2.1982 & 2.6250 & -2.6250 & 2.1982 \\ -2.8018 & 2.3750 & -2.3750 & 2.8018 \\ -3.2286 & 2.1982 & -2.1982 & 3.2286 \end{array} \right) \right)$