

Section 1: Algebra

- 1.1 $\sigma\tau = (187)(354), \tau\sigma = (147)(385)$
 1.2 a,b,c
 1.3 c
 1.4 $4x$
 1.5 1
 1.6 $x^T x = 1$
 1.7 Any five linearly independent matrices in W .
 1.8 b,c
 1.9 a
 1.10 $2 \pm \sqrt{3}, 3 \pm 2\sqrt{2}$

Section 2: Analysis

- 2.1 $e^{-\frac{1}{2}}$
 2.2 $\frac{4}{e}$
 2.3 $e^{\frac{k(k+1)}{2a}}$
 2.4 $2f(a)$
 2.5 0
 2.6 a,b
 2.7 a. conditionally convergent; b. absolutely convergent; c. divergent
 2.8 b,c
 2.9 $f(z) = \frac{1}{2} + \sum_{n=1}^{\infty} \frac{1}{2^{n+1}}(z-5)^n$
 2.10 $\frac{1}{2}(1-i)$

- 3.1 0
 3.2 a,b,c
 3.3 $\frac{6}{35}$
 3.4 $\cos^{-1}\left(\frac{1}{2}\right) = \frac{\pi}{3}$
 3.5 $\frac{1}{x} + \frac{1}{y} = 2$
 3.6 $\frac{1}{2} \left[\left(\frac{4}{3}\right)^{\frac{2}{3}} - \frac{7}{6} \right]$
 3.7 $\frac{N}{2}(2a + (N^2 - 1)d)$
 3.8 $\log N$
 3.9 b,c
 3.10 a,b,c

Note: Please accept any answer which is correct, but expressed in an equivalent, though different, form, where applicable.