$$(1+3x^5)^{7/11} = 1 + \frac{21x^5}{11} + \frac{\frac{7}{11}\times\frac{-4}{11}\times(3x^5)^2}{2!} + \frac{\frac{7}{11}\times\frac{-4}{11}\times\frac{-15}{11}\times(3x^5)^3}{3!} + \dots$$

$21\frac{1}{2}/25$

$$= 1 + \frac{21x^5}{11} - \frac{126x^{10}}{121} + \frac{1890x^{15}}{1331}$$ [illegible] OK

$3\frac{1}{2}/6$

This particular series converges for all x. Formally the series converges for $|x| < \infty$ or $-\infty < x < \infty$ ✗ R. Valid for $|3x^5| < 1$ i.e. $R = \left(\frac{1}{3}\right)^{\frac{1}{5}}$

4) $V(x,y) = (5x-2y,\ 7x-4y)\quad ((x,y)\in\mathbb{R}^2)$

a) i) $A = \begin{pmatrix} 5 & -2 \\ 7 & -4 \end{pmatrix}$ ✓

ii) $\det(A) = -6 \quad \mathrm{tr}(A) = +1$ ✓ $2\frac{1}{2}$

$u''(t) - u'(t) - 6u(t) = 0$

where $u(t)$ may be either of the coordinate functions $f(t)$ or $g(t)$ of the flow function

b) i) $V(1,0) = \begin{pmatrix} 5 & -2 \\ 7 & -4 \end{pmatrix}\begin{pmatrix} 1 \\ 0 \end{pmatrix} = \begin{pmatrix} 5 \\ 7 \end{pmatrix}$ ✓

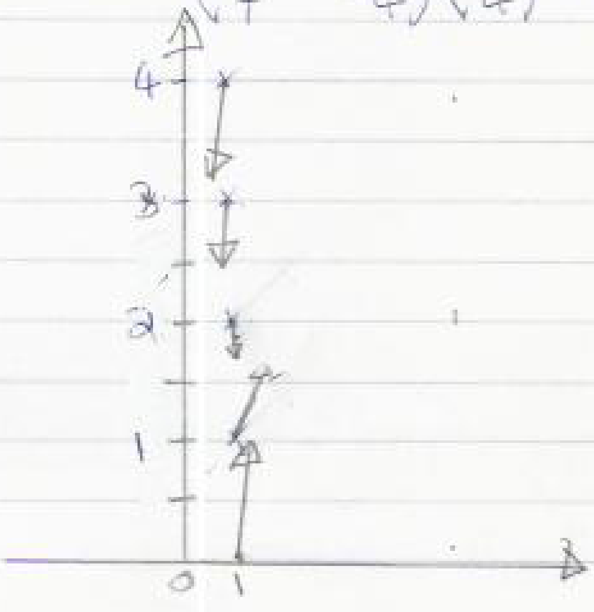
$V(1,1) = \begin{pmatrix} 5 & -2 \\ 7 & -4 \end{pmatrix}\begin{pmatrix} 1 \\ 1 \end{pmatrix} = \begin{pmatrix} 3 \\ 3 \end{pmatrix}$ ✓

$V(1,2) = \begin{pmatrix} 5 & -2 \\ 7 & -4 \end{pmatrix}\begin{pmatrix} 1 \\ 2 \end{pmatrix} = \begin{pmatrix} 1 \\ -1 \end{pmatrix}$ ✓

$V(1,3) = \begin{pmatrix} 5 & -2 \\ 7 & -4 \end{pmatrix}\begin{pmatrix} 1 \\ 3 \end{pmatrix} = \begin{pmatrix} -1 \\ -5 \end{pmatrix}$ ✓

$V(1,4) = \begin{pmatrix} 5 & -2 \\ 7 & -4 \end{pmatrix}\begin{pmatrix} 1 \\ 4 \end{pmatrix} = \begin{pmatrix} -3 \\ -9 \end{pmatrix}$ ✓

ii)



$2\frac{1}{2}$