$$\sqrt{2^2+3^2} \tag{1}$$

$$\sqrt{a^2+b^2} \tag{2}$$

$$\boxed{\frac{E[(\delta N(t))^2]}{E[N(t)]} - 1 = \lim_{\epsilon \to 0} \frac{2\lambda}{t} \int_{\epsilon}^{t-\epsilon} (t-t')\eta(t')\mathrm{d}t'} \tag{3}$$

$$\boxed{E = \boxed{mc^2}} \tag{4}$$

$$|x| = \begin{cases} x & x \geq 0 \\ -x & x < 0 \\ q & q = x \end{cases} \tag{5}$$

$$p(\zeta) = \frac{1}{C_0} \begin{cases} 2\pi\zeta + 2\zeta^2(\zeta - 4) & \text{for } 0 \leq \zeta \leq 1 \\ -4 - 2\zeta + \frac{16}{3}\sqrt{\zeta^2 - 1} - \frac{8}{3}\frac{1}{\sqrt{\zeta^2-1}} + \frac{8}{3}\frac{\zeta^2}{\sqrt{\zeta^2-1}} + \cdots & \\ \cdots + 4\left(\arcsin\left(\frac{1}{\zeta}\right) - \arccos\left(\frac{1}{\zeta}\right)\right) & \text{for } 1 \leq \zeta \leq \sqrt{2} \end{cases} \tag{6}$$

$$(c(\mathrm{d}V_n))^2 \ll 1 \tag{7}$$

$$cN(\mathrm{d}V_n) \gg 1 \tag{8}$$

Find eigenvalues of:

$$\begin{pmatrix} 3 & 4 & 2 \\ 0 & 5 & -1 \\ 0 & 2 & 2 \end{pmatrix} \qquad \begin{pmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{pmatrix} \tag{9}$$

$$\begin{vmatrix} 3-\lambda & 4 & 2 \\ 0 & 5-\lambda & -1 \\ 0 & 2 & 2-\lambda \end{vmatrix} = 0 \tag{10}$$

$$(3-\lambda)\left[(5-\lambda)(2-\lambda)+2\right] = 0 \tag{11}$$

$$(3-\lambda)(\lambda^2 - 7\lambda + 12) = 0 \tag{12}$$

$$(3-\lambda)^2(4-\lambda) = 0 \tag{13}$$

$$\lambda = \{3, 4\} \tag{14}$$

$$\frac{\partial(E_T)}{\partial t}+\frac{\partial(uE_t)}{\partial x}+\frac{\partial(vE_T)}{\partial y}+\frac{\partial(wE_T)}{\partial z}=\frac{-\partial(up)}{\partial x}+\frac{-\partial(vp)}{\partial y}+\frac{-\partial(wp)}{\partial z}+\frac{-1}{RePr}\left(\frac{\partial q_x}{\partial x}+\frac{\partial q_y}{\partial y}+\frac{\partial q_z}{\partial z}\right)+\frac{1}{Re}\left[\frac{\partial}{\partial x}(\right. \tag{15}$$

$$\begin{aligned}\frac{\partial(E_T)}{\partial t}+\frac{\partial(uE_t)}{\partial x}+\frac{\partial(vE_T)}{\partial y}+\frac{\partial(wE_T)}{\partial z}=\\ \frac{-\partial(up)}{\partial x}+\frac{-\partial(vp)}{\partial y}+\frac{-\partial(wp)}{\partial z}+\frac{-1}{RePr}\left(\frac{\partial q_x}{\partial x}+\frac{\partial q_y}{\partial y}+\frac{\partial q_z}{\partial z}\right)+\\ \frac{1}{Re}\left[\frac{\partial}{\partial x}\left(u\tau_{xx}+v\tau_{xy}+w\tau_{xz}\right)+\frac{\partial}{\partial y}\left(u\tau_{xy}+v\tau_{yy}+w\tau_{yz}\right)+\frac{\partial}{\partial z}\left(u\tau_{xz}+v\tau_{yz}+w\tau_{zz}\right)\right]\end{aligned} \tag{16}$$

$$\frac{x^2-7x-12}{x-3}=\frac{\cancel{(x-3)}(x+4)}{\cancel{x-3}} \tag{17}$$

$$\int_0^{\pi/2}(\cos x)\,\mathrm{d}x=\sin x\Big|_0^{\pi/2}=\cancelto{1}{\sin\left(\frac{\pi}{2}\right)}-\cancelto{0}{\sin(0)}=\boxed{1} \tag{18}$$