代数学幾何学 (A/B) 計算演習 [問題] (2009/06/04)

問. 次の平面ベクトル v への射影子行列を求めなさい

Q.1

$$\mathrm{v} = \begin{pmatrix} 7 \\ -7 \end{pmatrix}$$

Q.2

$$\mathrm{v} = \begin{pmatrix} -7 \\ 7 \end{pmatrix}$$

Q.3

$$\mathrm{v} = \begin{pmatrix} 7 \\ -6 \end{pmatrix}$$

Q.4

$$\mathrm{v} = \begin{pmatrix} -5 \\ 4 \end{pmatrix}$$

Q.5

$$\mathrm{v} = \begin{pmatrix} 2 \\ 0 \end{pmatrix}$$

Q.6

$$\mathrm{v} = \begin{pmatrix} 0 \\ 3 \end{pmatrix}$$

Q.7

$$\mathrm{v} = \begin{pmatrix} -3 \\ 5 \end{pmatrix}$$

Q.8

$$\mathrm{v} = \begin{pmatrix} -9 \\ -9 \end{pmatrix}$$

Q.9

$$\mathrm{v} = \begin{pmatrix} 1 \\ 2 \end{pmatrix}$$

Q.10

$$\mathrm{v} = \begin{pmatrix} -2 \\ 1 \end{pmatrix}$$

Q.11

$$\mathrm{v} = \begin{pmatrix} 5 \\ -6 \end{pmatrix}$$

Q.12

$$\mathrm{v} = \begin{pmatrix} -8 \\ 6 \end{pmatrix}$$

Q.13

$$\mathrm{v} = \begin{pmatrix} -7 \\ -7 \end{pmatrix}$$

Q.14

$$\mathrm{v} = \begin{pmatrix} 0 \\ -9 \end{pmatrix}$$

Q.15

$$\mathrm{v} = \begin{pmatrix} 3 \\ 1 \end{pmatrix}$$

Q.16

$$\mathrm{v} = \begin{pmatrix} -7 \\ 7 \end{pmatrix}$$

Q.17

$$\mathrm{v} = \begin{pmatrix} -2 \\ -4 \end{pmatrix}$$

Q.18

$$\mathrm{v} = \begin{pmatrix} -9 \\ 3 \end{pmatrix}$$

Q.19

$$\mathrm{v} = \begin{pmatrix} 8 \\ -3 \end{pmatrix}$$

Q.20

$$\mathrm{v} = \begin{pmatrix} -8 \\ -1 \end{pmatrix}$$

Q.21

$$\mathrm{v} = \begin{pmatrix} 5 \\ -5 \end{pmatrix}$$

Q.22

$$\mathrm{v} = \begin{pmatrix} -7 \\ 3 \end{pmatrix}$$

Q.23

$$\mathrm{v} = \begin{pmatrix} 9 \\ 2 \end{pmatrix}$$

Q.24

$$\mathrm{v} = \begin{pmatrix} -1 \\ -3 \end{pmatrix}$$

代数学幾何学 (A/B) 計算演習 [解答] (2009/06/04)

A.1

$$\begin{pmatrix} \frac{1}{2} & -\frac{1}{2} \\ -\frac{1}{2} & \frac{1}{2} \end{pmatrix}$$

A.2

$$\begin{pmatrix} \frac{1}{2} & -\frac{1}{2} \\ -\frac{1}{2} & \frac{1}{2} \end{pmatrix}$$

A.3

$$\begin{pmatrix} \frac{49}{85} & -\frac{42}{85} \\ -\frac{42}{85} & \frac{36}{85} \end{pmatrix}$$

A.4

$$\begin{pmatrix} \frac{25}{41} & -\frac{20}{41} \\ -\frac{20}{41} & \frac{16}{41} \end{pmatrix}$$

A.5

$$\begin{pmatrix} 1 & 0 \\ 0 & 0 \end{pmatrix}$$

A.6

$$\begin{pmatrix} 0 & 0 \\ 0 & 1 \end{pmatrix}$$

A.7

$$\begin{pmatrix} \frac{9}{34} & -\frac{15}{34} \\ -\frac{15}{34} & \frac{25}{34} \end{pmatrix}$$

A.8

$$\begin{pmatrix} \frac{1}{2} & \frac{1}{2} \\ \frac{1}{2} & \frac{1}{2} \end{pmatrix}$$

A.9

$$\begin{pmatrix} \frac{1}{5} & \frac{2}{5} \\ \frac{2}{5} & \frac{4}{5} \end{pmatrix}$$

A.10

$$\begin{pmatrix} \frac{4}{5} & -\frac{2}{5} \\ -\frac{2}{5} & \frac{1}{5} \end{pmatrix}$$

A.11

$$\begin{pmatrix} \frac{25}{61} & -\frac{30}{61} \\ -\frac{30}{61} & \frac{36}{61} \end{pmatrix}$$

A.12

$$\begin{pmatrix} \frac{16}{25} & -\frac{12}{25} \\ -\frac{12}{25} & \frac{9}{25} \end{pmatrix}$$

A.13

$$\begin{pmatrix} \frac{1}{2} & \frac{1}{2} \\ \frac{1}{2} & \frac{1}{2} \end{pmatrix}$$

A.14

$$\begin{pmatrix} 0 & 0 \\ 0 & 1 \end{pmatrix}$$

A.15

$$\begin{pmatrix} \frac{9}{10} & \frac{3}{10} \\ \frac{3}{10} & \frac{1}{10} \end{pmatrix}$$

A.16

$$\begin{pmatrix} \frac{1}{2} & -\frac{1}{2} \\ -\frac{1}{2} & \frac{1}{2} \end{pmatrix}$$

A.17

$$\begin{pmatrix} \frac{1}{5} & \frac{2}{5} \\ \frac{2}{5} & \frac{4}{5} \end{pmatrix}$$

A.18

$$\begin{pmatrix} \frac{9}{10} & -\frac{3}{10} \\ -\frac{3}{10} & \frac{1}{10} \end{pmatrix}$$

A.19

$$\begin{pmatrix} \frac{64}{73} & -\frac{24}{73} \\ -\frac{24}{73} & \frac{9}{73} \end{pmatrix}$$

A.20

$$\begin{pmatrix} \frac{64}{65} & \frac{8}{65} \\ \frac{8}{65} & \frac{1}{65} \end{pmatrix}$$

A.21

$$\begin{pmatrix} \frac{1}{2} & -\frac{1}{2} \\ -\frac{1}{2} & \frac{1}{2} \end{pmatrix}$$

A.22

$$\begin{pmatrix} \frac{49}{58} & -\frac{21}{58} \\ -\frac{21}{58} & \frac{9}{58} \end{pmatrix}$$

A.23

$$\begin{pmatrix} \frac{81}{85} & \frac{18}{85} \\ \frac{18}{85} & \frac{4}{85} \end{pmatrix}$$

A.24

$$\begin{pmatrix} \frac{1}{10} & \frac{3}{10} \\ \frac{3}{10} & \frac{9}{10} \end{pmatrix}$$