Step-1

Suppose $A=\begin{bmatrix} a & b \\ c & d \end{bmatrix}$

$$\det\left(A-\lambda I\right)=\begin{vmatrix} a-\lambda & b \\ c & d-\lambda \end{vmatrix}=0$$

$$=(a-\lambda)(d-\lambda)-bc$$
$$=\lambda^2-\left(a+d\right)\lambda+\left(ad-bc\right)$$

Step-2

Given that $|A-\lambda I|=\lambda^2-9\lambda+20$ and $a+d=9, ad-bc=20$

We get, $a+d=9, ad-bc=20$

There can be infinitely many integers which satisfy these equations.

Let us consider the ordered pairs of values of *a* and *d*

(1, 8), (2, 7), (3, 6),â€¦ which are positive and integer choices.

When a = 1, d = 8, we have the choices for b and c obtained by â€“bc = 12

This gives b = - 6, c = 2 or b = -3, c = 4 or b = -4, c = 3 or b = 6, c = - 2

So, some possible choices of matrices are $\begin{bmatrix} 1 & -4 \\ 3 & 8 \end{bmatrix},\begin{bmatrix} 1 & 4 \\ -3 & 8 \end{bmatrix},\begin{bmatrix} 1 & -6 \\ 2 & 8 \end{bmatrix},\begin{bmatrix} 1 & 6 \\ -2 & 8 \end{bmatrix}$