Matlab practice

Presume we have two vectors:
\[ a = [0 3 2 1 0]; \]
\[ b = [0 0 -2 -1 2 0 6 4 2 0]; \]

What is the result of the following:
\[ b(4:6) \]
\[ a' \]
\[ a(1:2:5) \]
\[ [0 2 0] \]

What is the position of maximum overlap between \( a \) and \( b \), found by convolution (as defined in class)?

What is the multiplication result at the position of maximum overlap?

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Let us assume we have recorded the voltage responses \( v(t) \) from 20 neurons, over the course of 1000ms. The responses are in the 20x1000 matrix \( \text{neuronResponses} \).

Each action potential is marked by the voltage rising above 5. (The resting state is -60.)
How can you determine the time of the first action potential for neuron 10?

Write code to make a figure with four subplots, each subplot showing the voltage for neuron 5, 10, 15, and 20 respectively.

\begin{verbatim}
figure; subplot(1,4,1), plot(neuroResponses(5,:));
subplot(1,4,2), plot(neuroResponses(10,:));
subplot(1,4,3), plot(neuroResponses(15,:));
subplot(1,4,4), plot(neuroResponses(20,:));
or
figure; subplot(4,1,1), plot(neuroResponses(5,:));
subplot(4,1,2), plot(neuroResponses(10,:));
subplot(4,1,3), plot(neuroResponses(15,:));
subplot(4,1,4), plot(neuroResponses(20,:));
\end{verbatim}
How can you compute the smallest voltage measured (across all neurons) at time t=1ms?

What is in the vector $w$ as defined below?

```matlab
for k=1:5,
    w(k) = 3*k;
end;

[3 6 9 12 15]
```