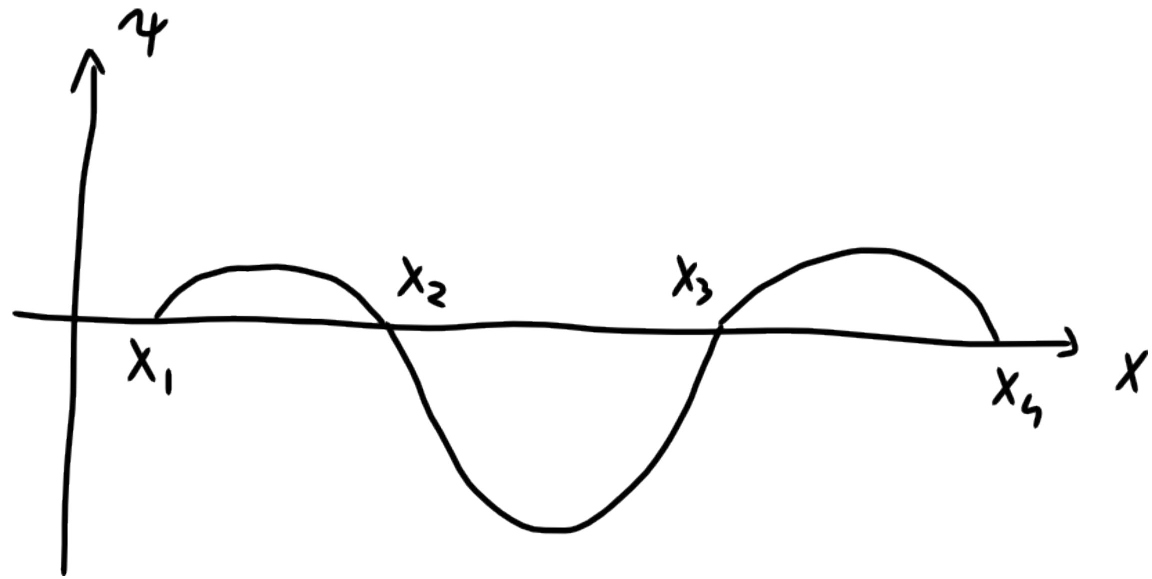
The picture shows a wavefunction of an electron in a wire. If we measure the electron's position, we are most likely to find it:



A) between x_1 and x_2

B) between x_2 and x_3

C) between x_3 and x_4

D) all three regions are equally likely

E) how can the probability be negative?

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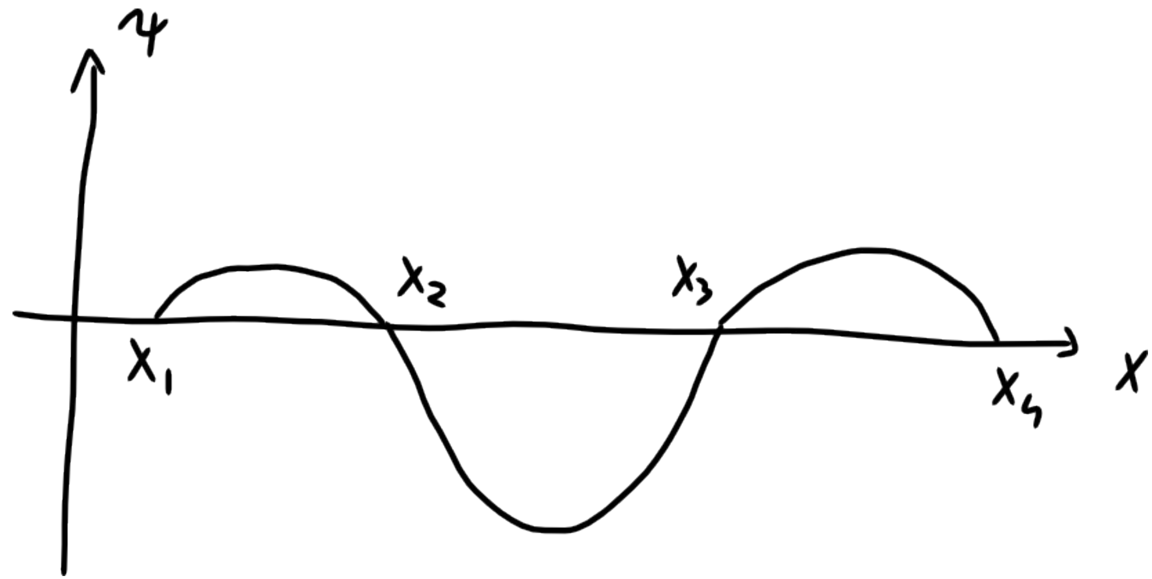

A) between x_1 and x_2

B) between x_2 and x_3

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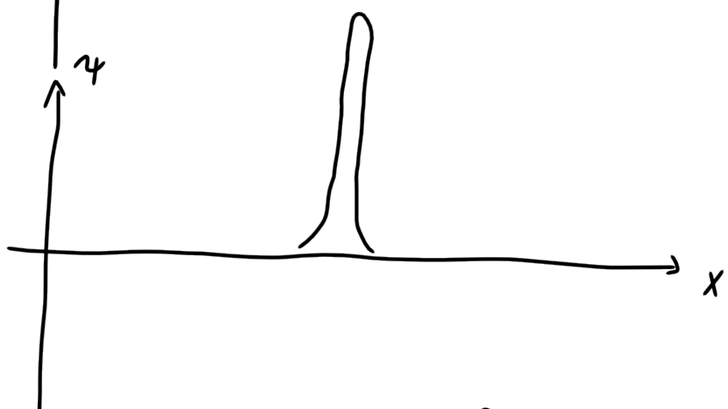
E) how can the probability be negative?

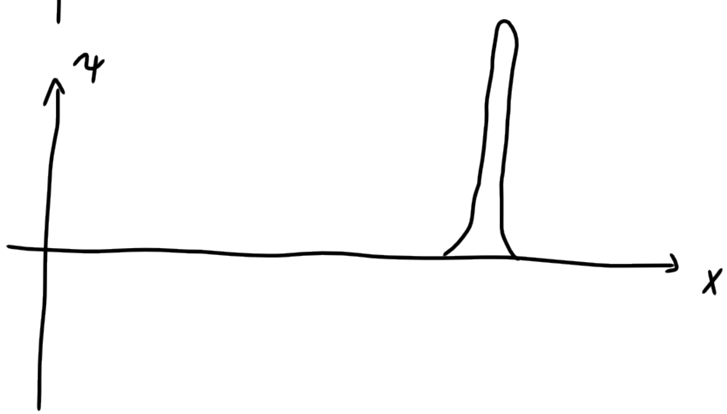
the wavefunction squared is biggest between x2 and x3

For an electron with the wavefunction shown on the left, which is a likely wavefunction shortly after a measurement of position is made?

A

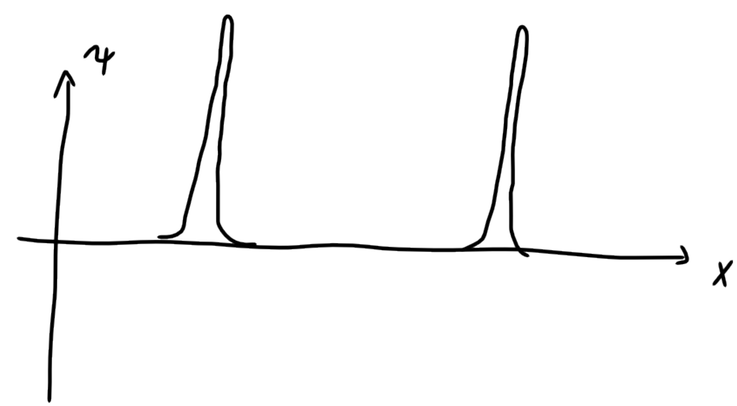


B

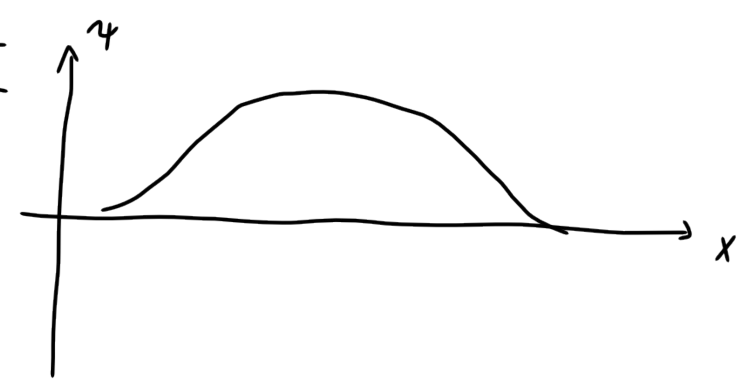


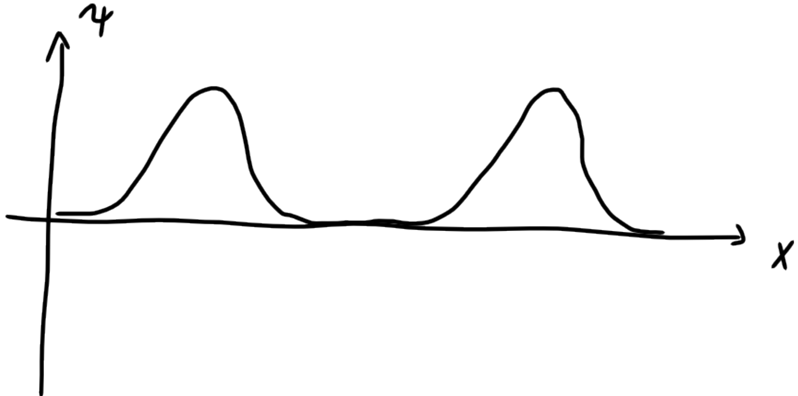
C

D



E





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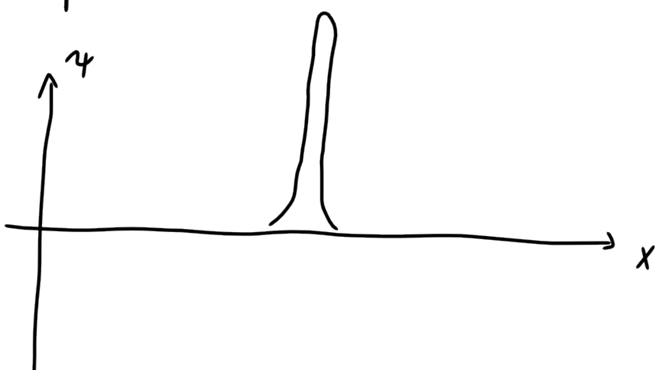
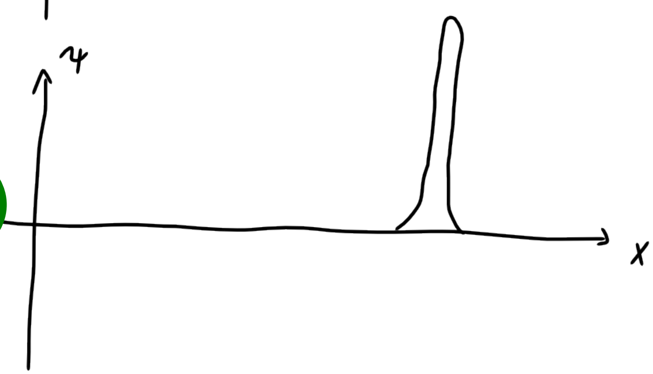


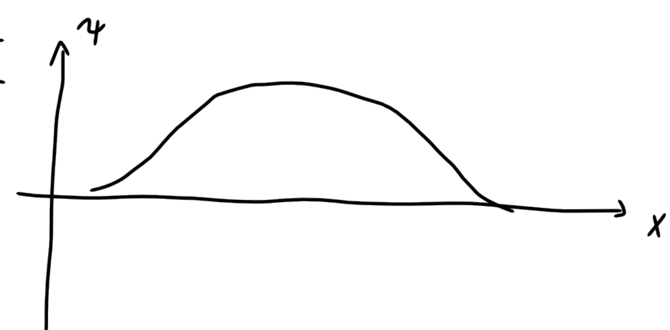
B



C

D

E



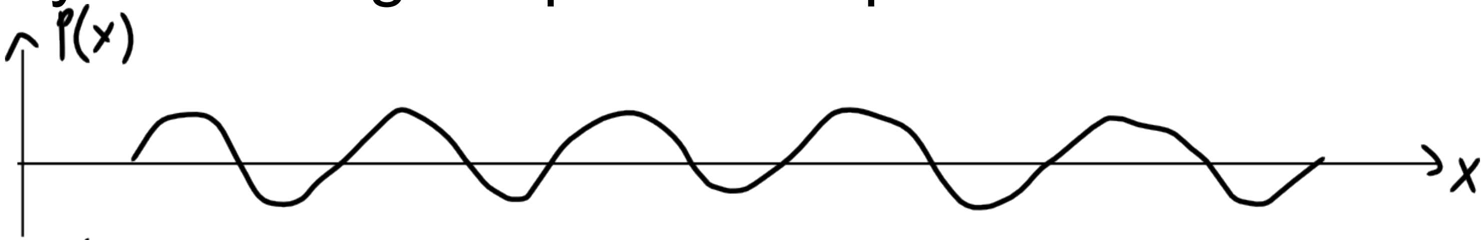
the wavefunction will became sharply peaked around the position where the electron is found.
B is wrong because the wavefunction is zero at this point.

The (not normalized) wavefunction of a particle is given by

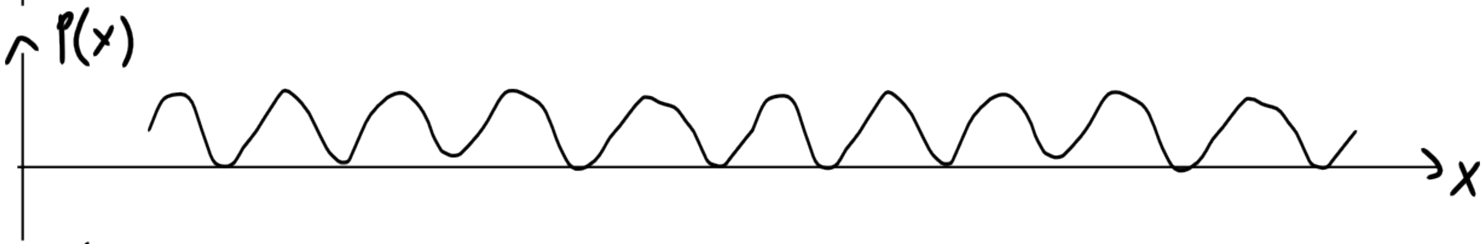
$$\Psi(x) = e^{i(2\pi/h)px}$$

Which of the pictures below best represents the probability density for finding the particle at point x?

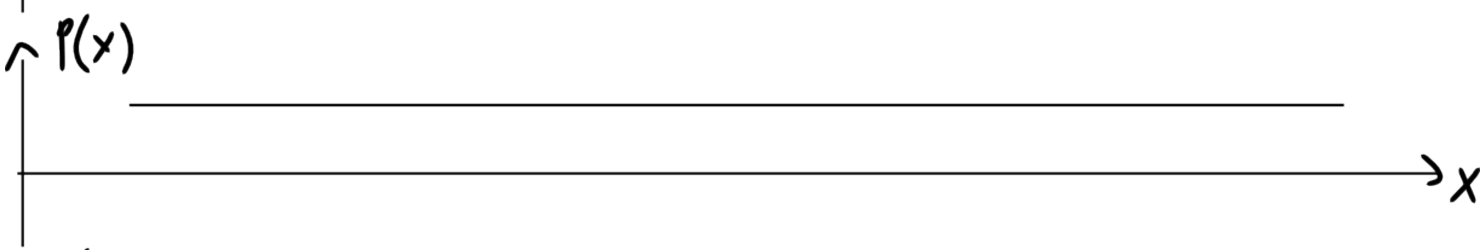
A)



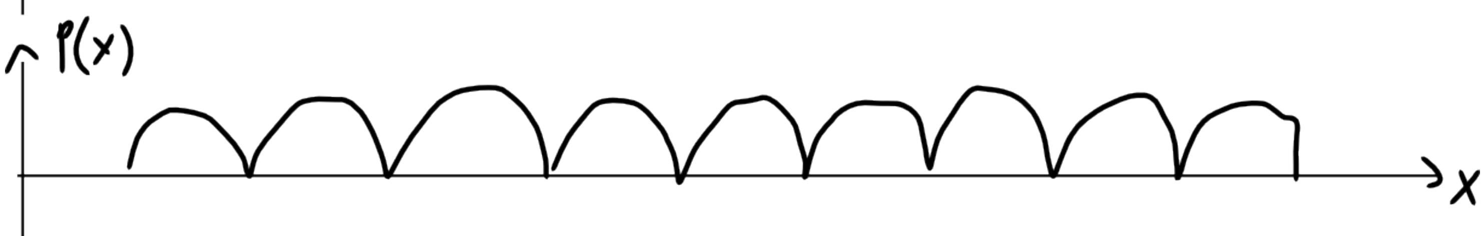
B)



C)



D)



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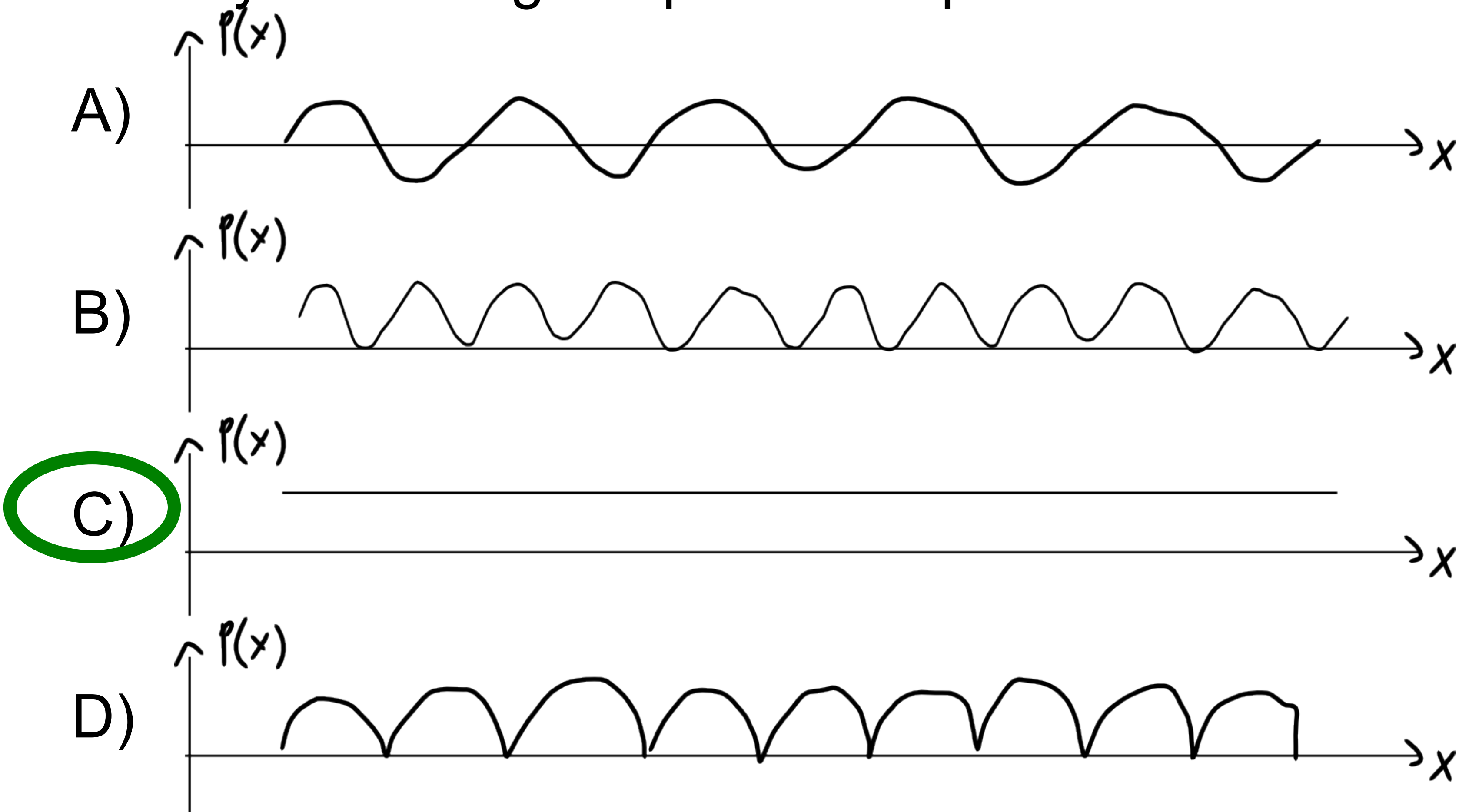
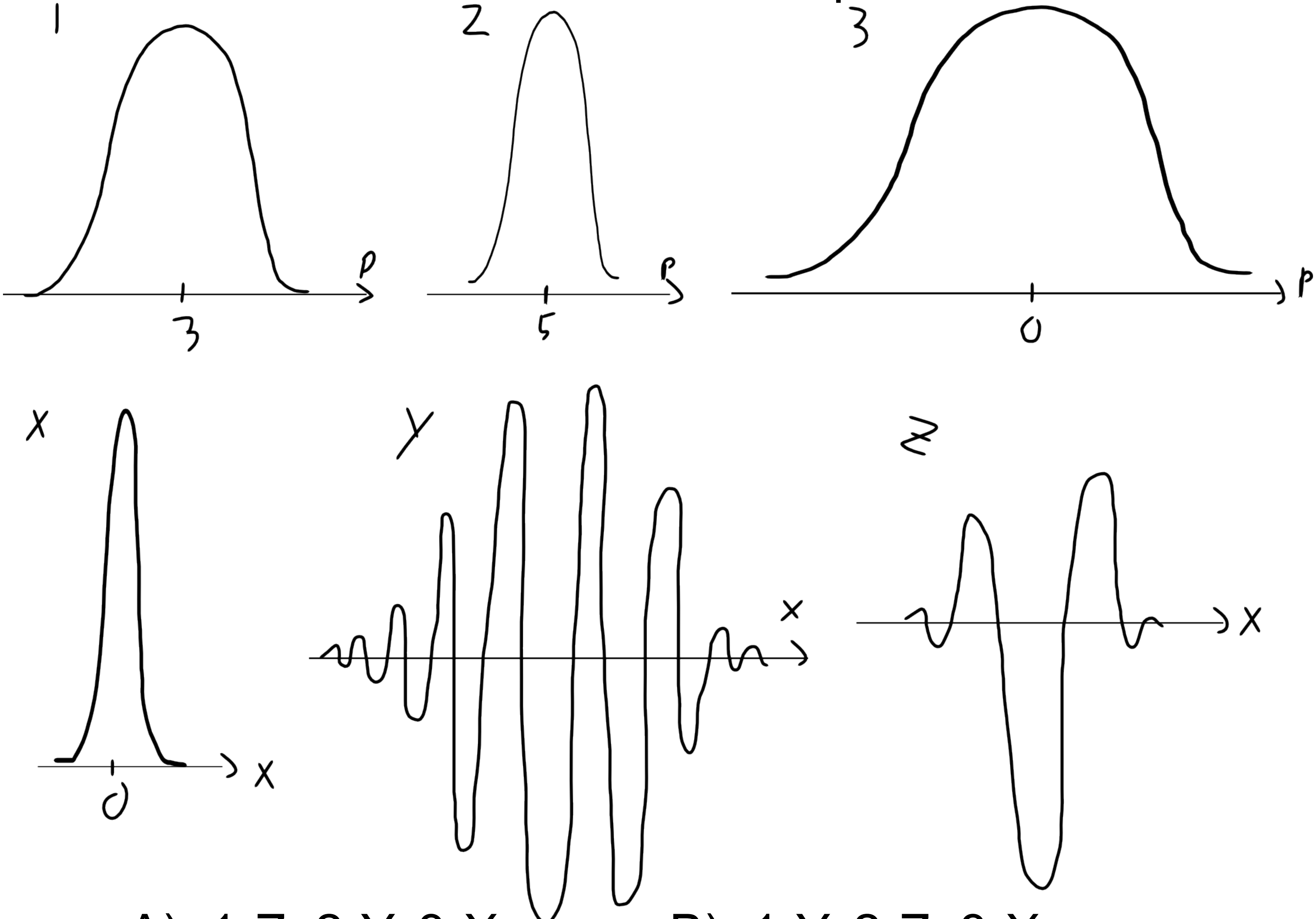


The magnitude of the wavefunction is just 1, so the probability density must be a constant

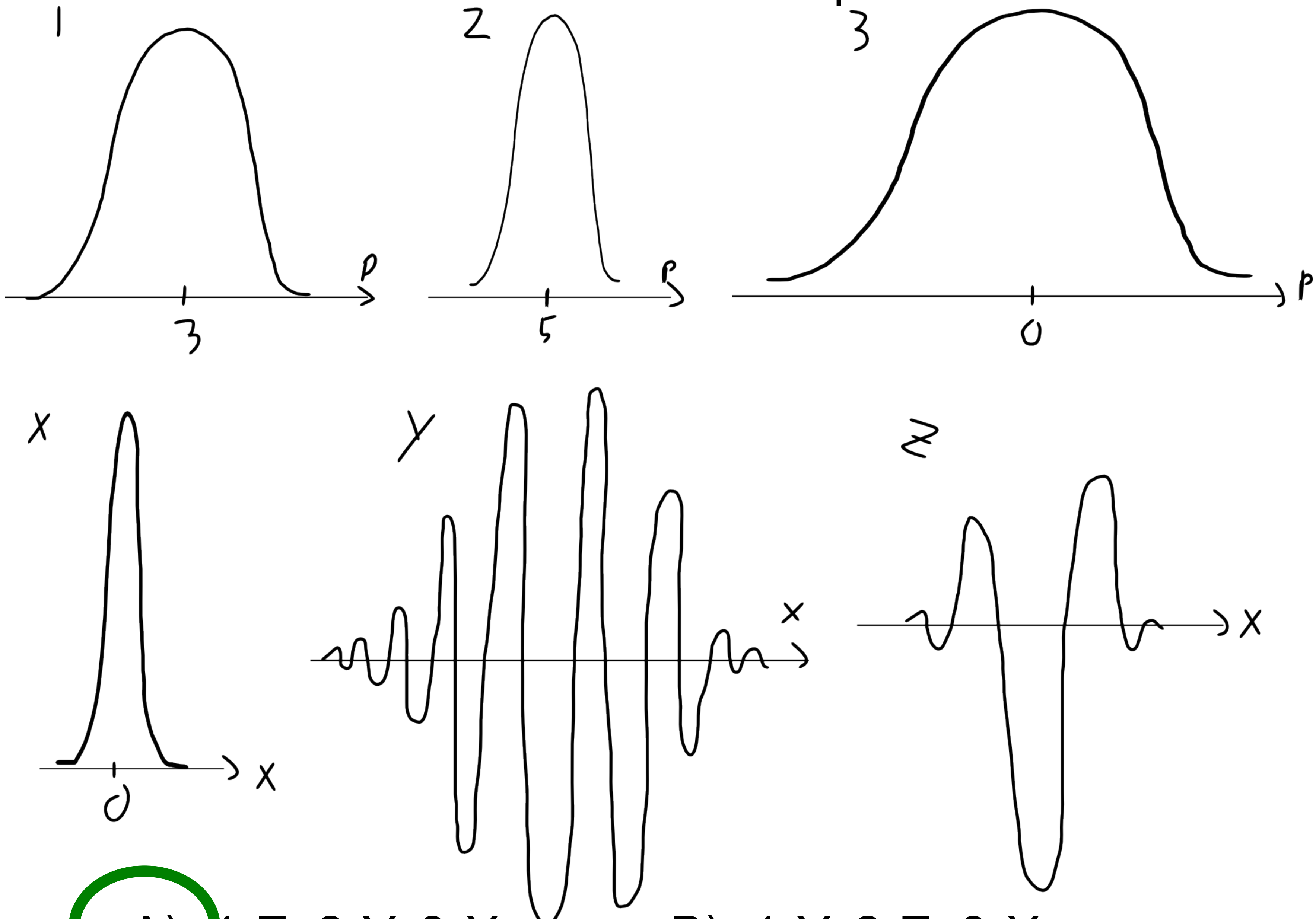
Which momentum distribution corresponds to which wavepacket?



A) 1-Z, 2-Y, 3-X   B) 1-Y, 2-Z, 3-X

C) 1-Z, 2-X, 3-Y   D) 1-X , 2-Z, 3-Y   E) 1-X, 2-Y, 3-Z

Which momentum distribution corresponds to which wavepacket?



A) 1-Z, 2-Y, 3-X B) 1-Y, 2-Z, 3-X

C) 1-Z, 2-X, 3-Y D) 1-X , 2-Z, 3-Y E) 1-X, 2-Y, 3-Z

If we measure the momentum of a particle, its wavefunction will typically

A) stay the same

B) became more localized

C) became more spread out

If we measure the momentum of a particle, its wavefunction will typically

A) stay the same

B) became more localized

C) became more spread out

after you measure the momentum,
the wavefunction must be in an eigenstate
of momentum - a one-component pure wave.
This is very spread out.