Source: KBe2020math401index

KBe20math401srcDeltaEpsilonReview1.png $|x-2||x+4| < \epsilon$ so near $x = 2$, $|x-2|$ is smol, so the primary term contributing to the value of the total function is $|x+4|$. Using the above condition, $|x-2| < 1 \Rightarrow 1 < x < 3 \Rightarrow 5 < x+4 < 7$

So, $|x + 4|$ is at most 7, we could try substituting it in and getting $7|x - 2| < \epsilon$. Also do the other side: $5|x - 2| < \epsilon$

You also need to do this: KBe20math401srcDeltaEpsilonProof2.png For the actual proof.
