1. Evaluate the limit

$$\lim_{x \to -4} \sqrt{x^2 + 9} \, \cos\left(\pi\left(\frac{4x^2 + 16x}{16 - x^2}\right)\right),$$

using the limit laws. Show all steps of simplifying within limits clearly. If you apply the direct substitution property, you should indicate where it is applied and justify the application.