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Quiz 2

Question 1. (4 marks) Rationalize the numerator:

$$\frac{1+\sqrt{x+2}}{\sqrt{x+2}} = \frac{1+\sqrt{x+2}}{\sqrt{x+2}} \cdot \frac{1-\sqrt{x+2}}{1-\sqrt{x+2}} = \frac{1-(x+2)}{\sqrt{x+2}-(x+2)}$$

$$= \frac{-x-1}{\sqrt{x+2}-x-2}$$

Question 2. (6 marks) Simplify the following expression. Express your answer as a single rational expression with positive exponents only:

$$\frac{(x^2+1)^{1/2} - 2x^2(x^2+1)^{-1/2}}{1-x^2} = \frac{(x^2+1)^{1/2} - \frac{2x^2}{(x^2+1)^{1/2}}}{1-x^2}$$

$$= \frac{\frac{(x^2+1)^{1/2}(x^2+1)^{1/2} - 2x^2}{(x^2+1)^{1/2}}}{1-x^2} = \frac{x^2+1 - 2x^2}{(x^2+1)^{1/2}(1-x^2)}$$

$$= \frac{1-x^2}{(x^2+1)^{1/2}(1-x^2)} = \frac{1}{(x^2+1)^{1/2}}$$