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$$\lim_{x\to+\infty} \sqrt{3^x + x^2 + 5} - \sqrt{3^{x+1} + 4x^2 + 1} =$$

$$= \lim_{x\to+\infty} \sqrt{3^{x+1} + 4x^2 + 1} \left(\sqrt{\frac{3^x\left(1 + \frac{x^2}{3^x} + \frac{5}{3^x}\right)}{3^x\left(3 + \frac{4x^2}{3^x} + \frac{1}{3^x}\right)}} - 1 \right) =$$

$$= \infty \left(\sqrt{\frac{1}{3}} - 1 \right) = -\infty$$