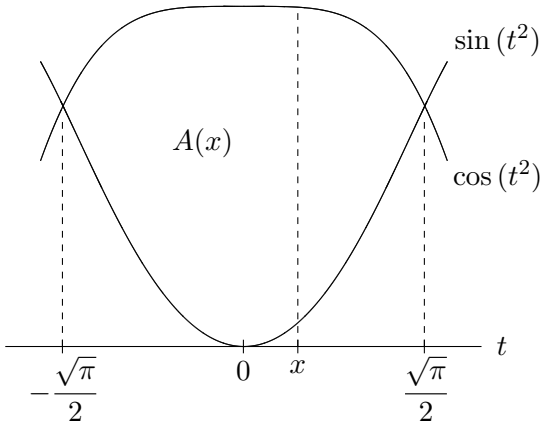
7. (5 points) For $-\frac{\sqrt{\pi}}{2} \le x \le \frac{\sqrt{\pi}}{2}$, let $A(x)$ be the area of the region bounded by the curves $\cos(t^2)$, $\sin(t^2)$, and the vertical lines $t = -\frac{\sqrt{\pi}}{2}$ and $t = x$. See the figure below.



(a) Sketch on the figure an area that represents $\Delta A = A(x + \Delta x) - A(x)$ for a small number Δx.

(b) Find a formula for the derivative $A'(x)$.

ANSWER : $A'(x) =$ _____.

8. (6 points) For what values of the positive number p does the infinite series $\sum_{n=1}^{\infty} \frac{n^3 - 4n^2}{n^p + 5}$ converge? *Explain the reason for your answer.*

ANSWER : _____.