```cpp
// COS30008, Problem Set 1/1, 2024

#include "Polygon.h"

float Polygon::getSignedArea() const
{
    float result = 0.0;

    if (fNumberOfVertices > 2) // a polygon with less than 3 vertices has no area
    {
        for (size_t i = 0; i < fNumberOfVertices; i++)
        {
            Vector2D lCurrent = fVertices[i];
            // if the current vertex is the last one, the next vertex will be the first vertice
            Vector2D lNext = fVertices[(i + 1) % fNumberOfVertices];

            // add determinant to the sum
            // in 2D, this value is mathematically equal to the cross product of the two 2D vectors in terms of magnitude (= x1 * y2 - y1 * x2)
            result += lCurrent.cross(lNext);
            // of course, we can calculate it independently as follows
            //result += lCurrent.getX() * lNext.getY() - lCurrent.getY() * lNext.getX();
        }
    }

    return result / 2.0f;
}
```