MATH 202, Fall 2023 **Name:** _____
In class work 24 **Row and Seat**: _____

In class work **24** has questions **1** through **3** with a total of **3** points. Turn in your work at the end of class *on paper*. This assignment is due at *Tuesday 28 November 13:20*.

"Some people talk to animals. Not many listen though. That's the problem."

A. A. MILNE

[1] 1. The polar equation for a curve $\mathscr{C}$ is $r = 3 - 5\sin(\vartheta)$. Use Desmos to draw $\mathscr{C}$. As best you can, reproduce the curve here.

[1] 2. From the graph, as best you can, find the cartesian coordinates of each point on $\mathscr{C}$ that has a *horizontal tangent*.

1 3. Find the exact location of each horizontal tangent. To do this, use the parametric representation $\mathscr{C} = \begin{cases} x = (3 - 5\sin(\vartheta))\cos(\vartheta) \\ y = (3 - 5\sin(\vartheta))\sin(\vartheta) \end{cases}$. You will need to simultaneously solve $\dfrac{\mathrm{d}y}{\mathrm{d}\vartheta} = 0$ and $\dfrac{\mathrm{d}x}{\mathrm{d}\vartheta} \neq 0$.