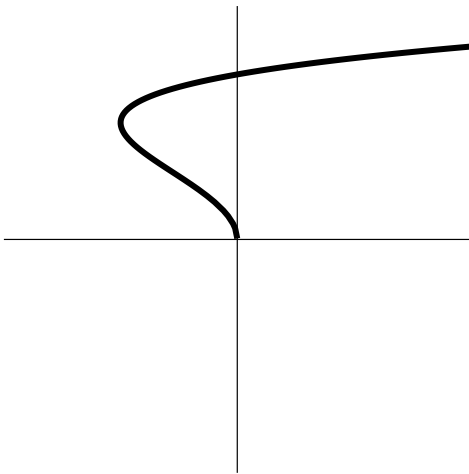Books, notes (in any form), and calculators are not allowed. *Show all your work.* Good Luck!

1. (5 pts) Given the parametric curve $x = t^2 - 2t$ and $y = \sqrt{t}$ [graphed below],

(a). Shade the region bounded by the parametric curve and the y-axis.

(b). Set up, ___but do not evaluate___, the integral(s) to find the area enclosed by the parametric curve and the y-axis. [Be sure to include correct bounds.]

2. (10 pts) Given $x = 2 - e^{3t}$ and $y = t^2 + t$,

(a). Find $\dfrac{dy}{dx}$.

(b). Find $\dfrac{d^2y}{dx^2}$.   [Do not simplify.]

(c). Find an equation for the tangent line at the point $(1, 0)$.