CALCULUS TA SESSION FOR GROUP 1 JANUARY 5

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(1) ⌐1081 M1 final Problem 7⌐

The eight-like curve has the following parametric equation

$$x = 2\sqrt{2}\sin t$$
$$y = \sin t \cos t$$

for $0 \le t \le 2\pi$.

(a) Find the tangent line at $t = 0$.

(b) Find the arc length.

(c) Find the shaded area which is enclosed by the curve $0 \le t \le \frac{\pi}{2}$ and the x-axis.

(2) ⌐1091 M1 final Problem 7⌐

Consider the parametric curve $(x(t), y(t)) = (1 - t^2, t - t^3)$

(a) The curve passes through the origin twice. Find t_1, t_2.

(b) Find the tangent line of curve at $(0, 0)$.

(c) Find the area enclosed by the loop.