Calculus and Analytic Geometry Math, Section 5

Review for Test 2

8.4 Use partial fractions to evaluate $\displaystyle\int \frac{3x^3 + 2x - 2}{x^2(x^2+2)}\,dx$.

8.8 Evaluate the improper integral $\displaystyle\int_0^{\pi/2} \frac{\cos x}{\sqrt{\sin x}}\,dx$.

9.1 Find the length of the curve $y = \frac{2}{3}(x-1)^{3/2}$ for $1 \le x \le 2$.

11.1 Eliminate the parameter t in the parametric curve $x = \sec t$, $y = \tan t$, $-\pi/2 < t < \pi/2$, and sketch the curve indicating its direction.

11.2 Find both tangents of the parametric curve $x = \sin t$, $y = \sin 2t$ at the origin $(0, 0)$.

11.2 Find the arc length of the deltaoid given by $x = 2\cos t + \cos 2t$, $y = 2\sin t - \sin 2t$.

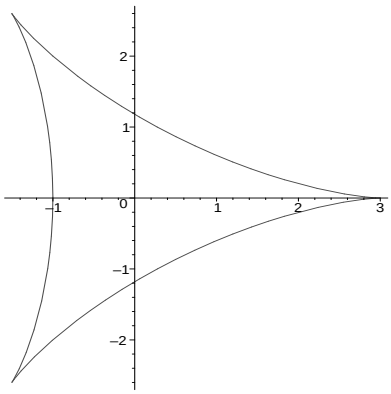

Figure 1: The deltaoid

11.2 Find the area enclosed by the loop of the parametric curve $x = 2t^2 - 1$, $y = t - t^3$.

11.3 Find the equation $y = mx + b$ of the tangent line to the polar curve $r = \sin 2\theta$ at $\theta = \pi/6$.

11.4 Find the area enclosed by the inner loop of the limaçon $r = 1 + 2\cos\theta$.

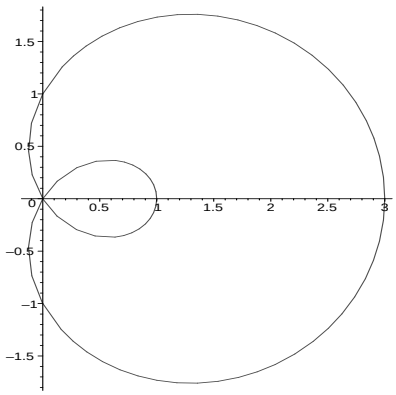

Figure 2: The limaçon

11.4 Find the arc length of the polar curve $r = 3\cos\theta + 4\sin\theta$ from $\theta = 0$ to $\theta = \pi/2$.