Preface

Here are a set of problems for my Calculus I notes. These problems do not have any solutions available on this site. These are intended mostly for instructors who might want a set of problems to assign for turning in. I try to put up both practice problems (with solutions available) and these problems at the same time so that both will be available to anyone who wishes to use them.

Area with Parametric Equations

For problems 1 – 3 determine the area of the region below the parametric curve given by the set of parametric equations. For each problem you may assume that each curve traces out exactly once from right to left for the given range of \( t \). For these problems you should only use the given parametric equations to determine the answer.

1. \( x = t^2 + 5t - 1 \quad y = 40 - t^2 \quad -2 \leq t \leq 5 \)

2. \( x = 3 \cos^2(t) - \sin^2(t) \quad y = 6 + \cos(t) \quad -\frac{\pi}{2} \leq t \leq 0 \)

3. \( x = e^{\frac{t}{2}} - 2 \quad y = 4 + e^{\frac{t}{2}} - e^{\frac{t}{2}} \quad -6 \leq t \leq 1 \)