1. Compute $\int_0^2 xe^{-x}\,dx$.

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2. Find $\int_0^\pi x\cos(4x)\,dx$.

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3. Use tabular integration to find the antiderivative of $x^3 e^x$.

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4. Find $\int \theta \sec^2\theta\,d\theta$.

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5. $\int e^{\sqrt{x}}\,dx$. Hint: Start with the u-substitution $u = \sqrt{x}$ (which also means that $x = u^2$).

6. Find $\int \arcsin(x)\,dx$.

7. Make a rough sketch of the slope field for the differential equation $\dfrac{dy}{dx} = \dfrac{x+y}{x-y}$. (Either hand drawn or printed from a computer is fine).

8. Use Euler's method (on a computer) to estimate the x-value where the solution of the differential equation $\dfrac{dy}{dx} = \dfrac{x+y}{x-y}$ with initial condition $y(0) = -1$ crosses the x-axis. Use $\Delta x = 0.01$, and give an answer accurate to two decimal places.