   a. Find $dy/dx$ at $(2, 1)$ where $y^3 + xy + x^2 = 7$.

   b. The graph of $2x^2 + 4y^2 = 9$ is an ellipse. Find the $xy$-coordinates of each point where the line tangent to this ellipse has slope 1.
2. [80 points] Do the following integrals.

a. \[ \int x \sin(x) \, dx \]

b. \[ \int \cos^4(2x) \, dx \]

c. \[ \int \frac{2x - 1}{(x + 2)(x + 1)} \, dx \]
d. $\int xe^{2x} \, dx$

e. $\int \arccos(x) \, dx$

f. $\int \sin(2x) \sin(3x) \, dx$
g. \( \int \sec^3(x) \, dx \)

h. \( \int \frac{1}{x^2 + 1} \, dx \)