Name: _____

Directions: Show all work. No credit for answers without work.

1. [**3 parts, 2 points each**] Let A, B, C, and k be constants. In the following, $\arcsin(x)$ is the inverse of $\sin(x)$, so that $\arcsin(\sin(x)) = x$ and similarly, $\arctan(x)$ is the inverse of $\tan(x)$. Differentiate the following with respect to x.

   (a) $y = (Ax^2 + Bx + C)^5$

   (b) $y = \tan(Ax) + e^{Bx} + x^{2k}$

   (c) $y = \arcsin(kx) + \arctan(kx)$

2. [**2 parts, 2 points each**] Solve the following integrals.

   (a) $\int x^2 + x(5x^2 + 12)^8 \, dx$

   (b) $\int \sin(x)\cos(x) \, dx$