1. [2.2.{14,20}] Solve the following IVPs explicitly. Determine the interval of validity.

   (a) $y' = xy^3(1+x^2)^{-1/2}$ with $y(0) = 1$

   (b) $y^2(1-x^2)^{1/2}\,dy = \arcsin x\,dx$ with $y(0) = 1$.

2. [2.1.28] Solve the IVP $y' + \frac{2}{3}y = 1 - \frac{1}{2}t$ with $y(0) = y_0$.

3. Find the general solution to $y' = \frac{x^2+y^2}{xy}$.