

1. (5 points) Find an implicit solution for $y' = x(y - 1)(y + 2) \cos^2(x)$ if $y(0) = 2$.

2. (3 points) Solve $y' = f(x)y$ if $y(0) = 0$ **by inspection** if $f(x)$ is any continuous function of x . Verify your answer is correct and then explain why your solution is the only solution to this IVP.

3. (2 points) consider $y' = x^2y$. Draw the isocline for the equation that corresponds to $y' = 1$ and then draw ten tangent segments on this isocline that are in the slope field for $y' = x^2y$. Do the same for the isocline corresponding to $y' = 0$.

