TEST II

Find the general solution of the following differential equations:

1. \( x^2y' - 3xy - 2y^2 = 0 \)

2. \( (y + y\cos(xy))dx + (x + x\cos(xy))dy = 0 \)

3. \( yy'' = (y')^2 \)

4. \( (y + x)dy = (y - x)dx \)

5. \( xy' + y = x\cos x \)

6. Find the shape of the main supporting cable in the Golden Gate Bridge assuming that the bridge has constant density and the weight of the cables are negligible.

Problems 1 through 5 are worth 8 points, 6 is worth 10.