

There are multiple ways to solve first order ODEs analytically.

An important skill to develop is to learn to recognize which technique (or techniques) can be used to solve a particular DE.

As we learn each technique in sections 2.2-2.5, determine if that technique can be used for each of the DEs below.

After you have decided whether a particular technique can be used for each of the questions, compare your answers to other students' answers.

$$[1] \quad \frac{dz}{dt} = \frac{2z(3t - z)}{t(4t - 3z)}$$

$$[2] \quad \frac{dx}{dy} = \frac{\cos y - ye^x}{3 \sin y - y^2 e^x}$$

$$[3] \quad y \, dx + (2x - 5y^3) \, dy = 0$$

$$[4] \quad \frac{dr}{d\theta} = \frac{2r(3r^5 + 2\theta)}{\theta(\theta - 8r^5)}$$

$$[5] \quad \left(y^2 - \frac{e^x}{y}\right) dx + y \, dy = 0$$

$$[6] \quad y^2 \sqrt{1+x} \, dy - x \, dx = 0$$

$$[7] \quad x' = \frac{1 + xe^t}{1 - e^t}$$

$$[8] \quad (x - x^2 \tan y) \, dy + (2x + \tan y) \, dx = 0$$