

# Differential Equations with Linear Algebra (M427J)

## Some answers to practice problems # 1

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$$\text{\S 1.2 \# 4. } y(t) = e^t \left( \frac{t}{2} - \frac{1}{4} \right) + C e^{-t}.$$

$$\text{\S 1.2 \# 6. } y(t) = 1 + C \exp \left( -\frac{t^3}{3} \right).$$

$$\text{\S 1.2 \# 14. } y(t) = e^{t^2} \left( 1 + \int_0^t e^{-s^2} ds \right).$$

$$\text{\S 1.2 \# 16. } y(t) = 1/4.$$

$$\text{\S 1.4 \# 4. } y(t) = -\ln(-e^{t+3} - C).$$

$$\text{\S 1.4 \# 6. } y(t) = \sqrt{2 \exp \left( \frac{-t^3}{3} \right) - 1}.$$

$$\text{\S 1.4 \# 8. } y(t) = \frac{1}{\sqrt{1 - \ln(t^2 + 1)}}.$$

$$\text{\S 1.4 \# 10. } y(t) = \arcsin \left( \frac{\sqrt{2}}{\sqrt{t^2 + 1}} \right).$$