CW 6.1, 6.3

1. Determine whether the function is a solution of the differential equation $y''-4y=0$.

$$y=3\cos(2x)$$

2. Determine whether the function is a solution of the differential equation $xy''+y'=0$.

$$y=C_1+C_2\ln x$$

3. Use integration to find a general solution $y=f(x)$ **of the differential equation.**

$$\frac{dy}{dx}=x\cos\left(x^2\right)$$

4. Use integration to find a general solution of the differential equation.

$$y'=\frac{e^{-3x}}{y}$$

5. $Given:\quad x^2y'=y$

a) Use integration to find a general solution $y=f(x)$ **of the differential equation.**

b) Make a 5 point slope field centered around (1, 0). It should include the 4 points that are one unit away from (1, 0).

6. Use integration to find the particular solution of the differential equation with the given initial condition.

$$x+2y\sqrt{x^2+1}\;\;y'=0,\qquad y(0)=1$$