

MAE 502, Spring 2019 HW4 Solution

Prob 1

$$u(x, t) = \left[ \frac{e^t}{\pi^2} + \frac{(\pi^2 - 1)e^{(1-\pi^2)t}}{\pi^2} \right] \sin(\pi x) + e^{(1-4\pi^2)t} \sin(2\pi x)$$

Prob 2

$$u(x, t) = 1 + \cos(x) + e^{-t} \sin(x)$$

Prob 3

$$u(x, t) = 4 \cosh(t) - 3 + t \cos(x) + (e^{-t} + t - 1) \sin(x) + \cos(\sqrt{8} t) \sin(3x)$$

Prob 4

$$u(x, t) = \cos(x) - \sin(x)$$