

LS7. Version A.

$$u_x = u_y + 2u$$

$$u(x, y) = X(x)Y(y)$$

$$X(x)Y(y) = X(x)Y(y) + 2X(x)Y(y)$$

$$\frac{X(x)}{X(x)} = \frac{Y(y)}{Y(y)} + 2 = \lambda$$

$$X(x) - \lambda X(x) = 0$$

$$Y(y) - (\lambda - 2)Y(y) = 0$$

$$X(x) = Ae^{\lambda x}$$

$$Y(y) = Be^{(\lambda-2)y}$$

$$u(x, y) = AB e^{\lambda x + (\lambda-2)y} = C e^{\lambda x + (\lambda-2)y}$$

$$u(x, 0) = 5e^{3x} = C e^{\lambda x} \quad \begin{array}{l} C = 5 \\ \lambda = 3 \end{array}$$

$$u(x, y) = 5e^{3x + y}$$