

MTH 352/652

Quiz #3

1. The function $f(x)$ is plotted below. For each of the below initial value problems defined for $x \in \mathbb{R}$ and $t > 0$, match them with the corresponding contour plot of the solution $u(t, x)$.

(i)

$$u_t = -u_x,$$

$$u(x, 0) = f(x).$$

(e)

(ii)

$$u_{tt} = u_{xx},$$

$$u(x, 0) = f(x),$$

$$u_t(x, 0) = 0.$$

(a)

(iii)

$$u_{tt} = u_{xx},$$

$$u(x, 0) = 0,$$

$$u_t(x, 0) = f(x).$$

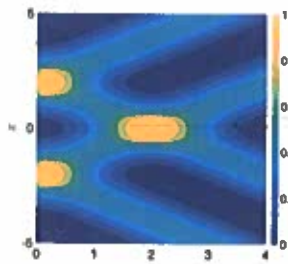
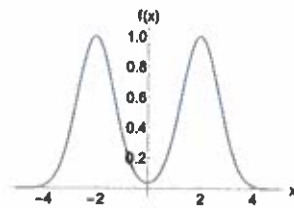
(f)

(iv)

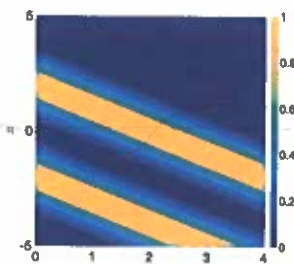
$$u_t = u_x,$$

$$u(x, 0) = f(x).$$

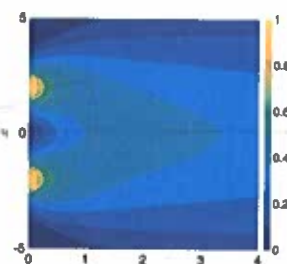
(b)



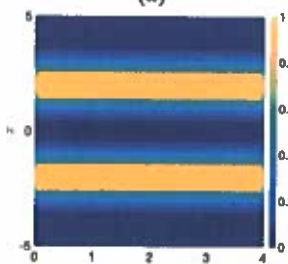
(a)



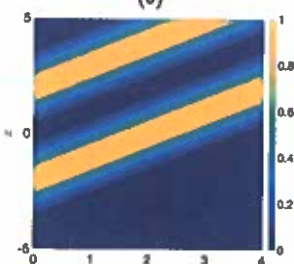
(b)



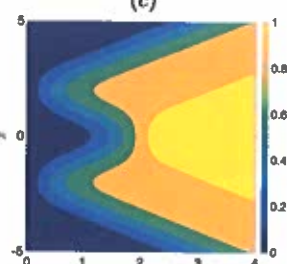
(c)



(d)



(e)



(f)