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TEMA 9: Ecuaciones en derivadas parciales.

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Resolver las EDP siguientes:

1.	EDP	$u_t = u_{xx}$
	CC	$u(0, t) = 0 \quad (0 < t < \infty)$ $u(1, 0) = 0$
	CI	$u(x, 0) = 1 \quad (0 < x < 1)$

2.	EDP	$u_t = u_{xx}$
	CC	$u(0, t) = 0 \quad (0 < t < \infty)$ $u(1, 0) = 0$
	CI	$u(x, 0) = x^2 - x \quad (0 < x < 1)$

3.	EDP	$u_t = u_{xx}$
	CC	$u(0, t) = 0 \quad (0 < t < \infty)$ $u(1, 0) = 1$
	CI	$u(x, 0) = x^2 \quad (0 < x < 1)$

4.	EDP	$u_t = u_{xx} - u$
	CC	$u(0, t) = 0 \quad (0 < t < \infty)$ $u(1, 0) = 0$
	CI	$u(x, 0) = \sin \pi x - 0,5 \sin 3\pi x \quad (0 < x < 1)$

5.	EDP	$u_{tt} = c^2 u_{xx} \quad (0 < t < \infty)$
	CI	$u(x, 0) = \exp(-x^2) \quad (-\infty < x < \infty)$ $u_t(x, 0) = 0$

6.	EDP	$u_{tt} = c^2 u_{xx} \quad (0 < t < \infty)$
	CI	$u(x, 0) = 0 \quad (-\infty < x < \infty)$ $u_t(x, 0) = x \exp(-x^2)$

7.	EDP	$u_{tt} = \alpha^2 u_{xx}$
	CC	$u(0, t) = 0 \quad (0 < t < \infty)$ $u(1, 0) = 0$
	CI	$u(x, 0) = \sin 5\pi x \quad (0 < x < 1)$ $u_t(x, 0) = 5\pi\alpha \sin 5\pi x$

8.	EDP	$u_{tt} = \alpha^2 u_{xx}$
	CC	$u(0, t) = 0 \quad (0 < t < \infty)$ $u(1, 0) = 0$
	CI	$u(x, 0) = 2hx \quad (0 < x < 1/2)$ $u(x, 0) = 2h(1-x) \quad (1/2 < x < 1)$ $u_t(x, 0) = 0 \quad (0 < x < 1)$

9.	EDP	$u_{tt} = \alpha^2 u_{xx} - \beta u_t$
	CC	$u(0, t) = 0 \quad (0 < t < \infty)$ $u(1, 0) = 0$
	CI	$u(x, 0) = 2hx \quad (0 < x < 1/2)$ $u(x, 0) = 2h(1 - x) \quad (1/2 < x < 1)$ $u_t(x, 0) = 0 \quad (0 < x < 1)$

10.	EDP	$u_{tt} = \alpha^2 u_{xx} - \beta u$
	CC	$u(0, t) = 0 \quad (0 < t < \infty)$ $u(1, 0) = 0$
	CI	$u(x, 0) = 2hx \quad (0 < x < 1/2)$ $u(x, 0) = 2h(1 - x) \quad (1/2 < x < 1)$ $u_t(x, 0) = 0 \quad (0 < x < 1)$