Ecuaciones

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Nombre del tema: Ecuaciones de la recta y desigualdades lineales

Parcial: 1

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Ecuacion de la recta

Ecuacion Punto - Pendiente

$$y - y_1 = m(x - x_1)$$
$$y = mx + b$$

1. $A(\overset{x_1}{5}, \overset{y_1}{9})$ y $m = 3$

$$y - 9 = 3(x - 5)$$

$\cancel{y - 9 \quad 3}$ $y - 9 = 3(x - 5)$

$$y - 9 = 3x - 15$$

$$y = 3x - 15 + 9$$

$$y = 3x - 6$$

2. $A(\overset{x_1}{0}, \overset{y_1}{-2})$ $m = -\dfrac{3}{4}$

$$y - (-2) = -\frac{3}{4}(x - 0)$$

$$y + 2 = -\frac{3}{4}(x - 0)$$

$$4(y + 2) = -3(x - 0)$$

$$4y + 8 = -3x$$

$$4y = -3x - 8$$

$$y = \frac{-3x - 8}{4}$$

Ecuacion de la recta que pasa por 2 puntos

1. A $(-3, -1)$ B $(5, 2)$

Formula
$$y - y_1 = m(x - x_1)$$

$$m = \frac{2 - (-1)}{5 - (-3)} = \frac{2+1}{5+3} = \frac{3}{8}$$

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

$$y + 1 = \frac{3}{8}(x+3)$$

$$-8(y+1) = 3(x+3)$$

$$-8y - 8 = 3x + 9$$

$$-8y = 3x + 9 + 8$$

$$-8y = 3x + 17$$

$$y = \frac{3x + 17}{8}$$

2. A $(2, 4)$ B $(-7, 5)$

$$m = \frac{5 - 4}{-7 - 2} = \frac{1}{-8}$$

$$y - 4 = -\frac{1}{8}(x - 2) \qquad y = \frac{-x + 34}{8}$$

$$8(y - 4) = -1(x - 2)$$

$$8y - 32 = -x + 2$$

$$8y = -x + 2 + 32$$

$$8y = -x + 34$$

Desigualdades lineales

1. $3(2x-1) > 4 + 5(x-1)$

$6x - 3 > 4 + 5x - 5$

$6x - 3 > -1 + 5x$

$6x - 5x > -1 + 3$

$x > 2$

2. $(4x+1)(2x-2) \geq 8x(x-5)$

$8x^2 - 8x + 2x - 2 \geq 8x^2 - 40x$

$8x^2 - 6x - 2 \geq 8x^2 - 40x$

$8x^2 - 6x - 8x^2 + 40x \geq 2$

$34x \geq 2$

$x \geq \dfrac{2}{34}$

3. $3x - 5 < 2x - 3$

$3x - 2x < -3 + 5$

$x < 2$

4. $-2 < 7x - 13 \leq 15$

$-2 + 13 < 7x - 13 + 13 \leq 15 + 13$

$11 < 7x \leq 28$

$\dfrac{11}{7} < \dfrac{7x}{7} \leq \dfrac{28}{7}$

$\dfrac{11}{7} < x \leq 4$

5. $15 \geq 9x - 9 > 5$

$15 \geq 9x - 9$

$15 + 9 \geq 9x - 9 + 9$

$24 \geq 9x$

$\dfrac{24}{9} \geq x$

$9x - 9 > 5$

$9x > 5 + 9$

$x > \dfrac{14}{9}$