

2.2 Linear Function Equations

Objectives: ID Linear Equations and Functions
Write Linear Equations in standard form and graph them.

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I. State whether each function is linear and explain.

Ex 1) $6x = 2x - 5$ *yes, $m=2$ $b=-5$*

Ex 2) $p(x) = x^3 + 2$ *No, x is cubed*

Ex 3) $y = 4 + 7x$ *yes, $m=7$ $b=4$*

II. Standard Form: $Ax + By = C$

A, B, C must be integers
A, B, C's GCF = 1
 $A \geq 0$ *A must be (+)*
A, B both not zero

Write each equation in standard form and identify A, B, and C.

Ex 4) $y = 3x - 9$
 $-3x - 3x$
 $-3x + y = -9$
 $3x - y = 9$
 A=3
 B=-1
 C=9

Ex 5) $-(2/3)x = 2y - 1$
 $-2/3x = 2y - 1$
 $+2/3x = -3(2y) - 1(-3)$
 $2x = -6y + 3$
 $+6y + 6y$
 $2x + 6y = 3$
 A=2
 B=6
 C=3

Ex 6) $8x - 6y + 4 = 0$
 $8x - 6y = -4$
 GCF=2
 $4x - 3y = -2$
 A=4
 B=-3
 C=-2

Handwritten notes: "can be written as $y=mx+b$ ", "slope", "y-int", "linear $5x-3y=7$ $x=9$ $bs=-3$ is $y=1/5x$ ", "Not $2x+8=8$ $y=\sqrt{x+5}$ / no variable under", "No variables times each other", "A must be (+)", "No variable in denominator", "A, B, C's GCF = 1", "A, B both not zero".

III. x- and y- intercepts

Find the x- and y-intercepts and graph.

Ex 7) $3x - 4y + 12 = 0$

x-int $y=0$
 $3x - 4(0) + 12 = 0$
 $3x + 12 = 0$
 $-12 - 12$
 $3x = -12$
 $3/3$
 $x = -4$ **(-4, 0)**

y-int $x=0$
 $3(0) - 4y + 12 = 0$
 $-4y + 12 = 0$
 $-12 - 12$
 $-4y = -12$
 $4/4$
 $y = 3$ **(0, 3)**