Lesson 5-4B - Transforming Equations

Algebra - January 13, 2012

Write the equation of the line that passes through the points (3, 3) and (6, 4).

(x_1, y_1) (x_2, y_2)

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{4-3}{6-3} = \frac{1}{3}$$

$m = \frac{1}{3}$

$y = mx + b$

$3 = \frac{1}{3}(3) + b$

$3 = 1 + b$

$2 = b$

$b = 2$

$y = \frac{1}{3}x + 2$

Write the equation of the line that passes through the points (-3,1) and (3, 5)

$m = \frac{5-1}{3+(+3)} = \frac{4}{6} = \frac{2}{3}$

$y = mx + b$

$5 = \frac{2}{3}(3) + b$

$5 = 2 + b$

$3 = b$

$m = \frac{2}{3}$

$b = 3$

$y = \frac{2}{3}x + 3$

Graph using $y=mx+b$.

Due at the end of class: p.255 #7, 9, 12, 13, 15, 16, 19-22

Due Today: 5-4A p.255 #2-8 even, #10, 14 (write in slope-intercept form)

12. $(0, 2); m = \frac{4}{5}$

x y

$m = \frac{4}{5}$

$b = 2$

$y = mx + b$

$2 = \frac{4}{5}(0) + b$

$2 = b$

$y = \frac{4}{5}x + 2$

19. $(-1, 0), (1, 2)$

x y_1 x_2 y_2

$\frac{2-0}{1+(+1)} = \frac{2}{2} = 1$

$m = 1$

$b = 1$

$y = mx + b$

$y = 1x + 1$

$2 = 1(1) + b$

$2 = 1 + b$

$1 = b$

21. $(4, -2), (9, -8)$ $m = -\frac{6}{5}$

$x_1\ y_1$ $x_2\ y_2$

$\frac{-8+(+2)}{9-4} = \frac{-6}{5}$

$b = \frac{14}{5}$

$y = -\frac{6}{5}x + \frac{14}{5}$

$y = mx + b$

$-2 = -\frac{6}{5}\left(\frac{4}{1}\right) + b$

$-2 = -\frac{24}{5} + b$

$+\frac{24}{5}\quad +\frac{24}{5}$

$\frac{24}{5} - \frac{2 \cdot 5}{1 \cdot 5} = b$

$\frac{24}{5} - \frac{10}{5} = b$

$\frac{14}{5} = b$