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class: MATH 181
date: January 22, 2009

Quiz 1

Problem 1

Find the equation of a line that passes through the points $P_1(-6, -3)$ and $P_2(2, 4)$.

Problem 2

Find the equation of a line that passes through the point $P_1(-6, -3)$ and has a slope 2.

Problem 3

Find the slope and the y -intercept of the equation of a line:

$$x + 3y = 0.$$

Problem 4

Solve for x :

$$4 = e^x.$$

Problem 5

Find the equation of a vertical line passing through the point $(5, 0)$.

Solutions

Problem 1

The equation of a line is $y = mx + b$ with $m = \frac{y_2 - y_1}{x_2 - x_1}$ so

$$m = \frac{4 - (-3)}{2 - (-6)} = \frac{7}{8}$$

and we get

$$y = \frac{7}{8}x + b.$$

To calculate b , we substitute either point into the equation, for example $x = 2, y = 4$:

$$4 = \frac{7}{8}2 + b$$

from which $b = \frac{9}{4}$. The equation of a line is then:

$$y = \frac{7}{8}x + \frac{9}{4}.$$

Problem 2

We are given the slope $m = 2$ so:

$$y = 2x + b.$$

To calculate b , we substitute the point P_1 into the equation and solve for b :

$$-3 = 2(-6) + b,$$

$$b = 9.$$

The equation of a line is then:

$$y = 2x + 9.$$

Problem 3

We rewrite the equation to the form $y = mx + b$:

$$x + 3y = 0,$$

$$y = -\frac{1}{3}x.$$

So the slope is $m = -\frac{1}{3}$ and y-intercept is 0.

Problem 4

We apply the natural logarithm to both sides of the equation:

$$4 = e^x,$$

$$\ln 4 = \ln e^x$$

and use the identity $\ln e^x = x$:

$$x = \ln 4.$$

Problem 5

The equation of such line is just:

$$x = 5.$$