SOLUTIONS

Math 51B Summer 2006 Name:

QUIZ #3 @ 20 points
Section 3.4

Write neatly. Use a pencil. Label the axes and the points used. Show work in order to get credit. No proof, no credit given.

1. Write an equation of the line with slope 3 and y-intercept (0,-2). $y = mx+b$, $m=3$, $b=-2$

$\boxed{y = 3x - 2}$.

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2. a) Write an equation of the line passing through the point (1,2) and having slope 4.

$y - y_1 = m(x - x_1)$, where $m = 4$, $(x_1, y_1) = (1,2)$

$\boxed{y - 2 = 4(x-1)}$

b) Write the equation in slope-intercept form.

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

$y - 2 = 4x - 4$

$y = 4x - 4 + 2$

$\boxed{y = 4x - 2}$

c) Write the equation in standard form.

$y = 4x - 2$

$\boxed{-4x + y = -2}$ OR $\boxed{4x - y = 2}$

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3. Write an equation of the line passing through (-1,3) and (2, -5).

$y - y_1 = m(x - x_1)$ with $(x_1, y_1) = (-1, 3)$

need $m = ?$

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

$m = \frac{8}{-3}$ $\quad y - 3 = \frac{-8}{3}(x-(-1)) \Rightarrow \boxed{y - 3 = \frac{-8}{3}(x+1)}$.

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4. a) What is the slope of the line $2x + 5y = 7$?

$2x + 5y = 7$

$5y = -2x + 7$

$\boxed{y = \frac{-2}{5}x + \frac{7}{5}}$. slope-1 form $\Rightarrow \boxed{m = \frac{-2}{5}}$

b) What is the slope of a line parallel to the line from part a)? (because $\ell_1 \parallel \ell_2 \Leftrightarrow m_1 = m_2$)

$\boxed{m_{\parallel} = \frac{-2}{5}}$

c) What is the slope of a line perpendicular to the line from part a)? (because $\ell_1 \perp \ell_2 \Leftrightarrow m_1 = \frac{-1}{m_2}$)

$m_{\perp} = \frac{-1}{m} = \frac{5}{2}$ $\quad \boxed{m_{\perp} = \frac{5}{2}}$