Math 41
Quiz 2
September 3, 2010

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1. Find slope intercept form of the equation of the line through $(3,-1)$ and ***perpendicular*** to the line $y=\frac{3}{4}x+5$.

$m = \frac{3}{4} \rightarrow m_{\perp} = -\frac{4}{3}$

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

$y - (-1) = -\frac{4}{3}(x-3)$

$y + 1 = -\frac{4}{3}x + 4$

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

2. Find the equation of the line through the points $(-2,1)$ and $(-2,4)$.

$m = \frac{\Delta y}{\Delta x} = \frac{4-1}{-2-(-2)} = \frac{3}{0}$ m is undefined

vertical line

$x = -2$

3. In the 1966 Penn State football season, new head coach Joe Paterno won 5 games, as of the 2009 season JoePa had increased his number of victories to 394.

(a) Assuming the number of victories, was increasing at a constant rate, find a linear model giving the number of wins, ***N, in terms of the year, t,*** with $t = 6$ corresponding to the year 1966. *If necessary, round values to one decimal place.*

$N = mt + b$ points: (t, N)

$(6, 5)$

$(43, 394)$

$m = \frac{\Delta N}{\Delta t} = \frac{394-5}{43-6}$

$= \frac{389}{37} \approx 10.5$

(b) Use your model to find the total number of wins by the year 2012. *If necessary, round values to one decimal place.*

$N - 5 = 10.5(t-6)$

$N - 5 = 10.5t - 63$

$N = 10.5t - 58$

$2012 \rightarrow t = 46$

$N = 10.5(46) - 58$

$N = 425$