Math 2 Quiz 4 Thurs., 3/17/16
WORK INDIVIDUALLY. NO NOTES; NO CALCULATOR.

TO RECEIVE FULL CREDIT CLEARLY & CORRECTLY SHOW ALL WORK THAT LEADS TO YOUR ANSWER. IF APPROPRIATE, CIRCLE ANSWERS! NO DECIMAL ANSWERS. (5 PTS. EACH)

1. Line \( \ell \) is given by \( 3x + 2y + 1 = 0 \). Write this equation in explicit form. (4 pts.)

\[
2y = -3x - 1 \\
y = \frac{-3}{2}x - \frac{1}{2}
\]

2. Write the equation of a line through \( \left( \frac{3}{5}, \frac{1}{2} \right) \) with slope \( m = \frac{5}{9} \) (6 pts.)

Write your answer in the form \( ax + by + c = 0 \) or \( ax + by = C \) where \( a, b, c, C \in \text{Z} \), the integers.

Using \( y = mx + b \)

\[
y = \frac{-5}{9}x + b
\]

Find \( b \):

\[
-\frac{2}{3} = \frac{-5}{9}(\frac{3}{5}) + b
\]

\[
-\frac{1}{2} = \frac{-5}{9} \cdot \frac{3}{5} + b
\]

\[
-\frac{1}{2} = \frac{-5}{9} \cdot \frac{3}{5} + b 
\Rightarrow b = \frac{-5}{9} \cdot \frac{3}{5} = \frac{-1}{6}
\]

\[
18 \left[ \frac{-5}{9}x - \frac{1}{6} \right] \Rightarrow 18y = -10x - 3 \Rightarrow (0x + 18y = -3)
\]

3. Given \( y = f(x) = -2(x + 3)^2 - \frac{7}{4} \). (2 pts.)

Shift left 3 units

Shift down \( \frac{7}{4} \) units.

What are the coordinates of the vertex of the graph of \( f \)?

2) \((-3, -\frac{7}{4})\)

3. A batter hits a baseball straight up into the air. The height \( h \) in feet of the baseball above the ground at \( t \) seconds is given by:

\[
h = -16t^2 + 96t + 3.
\]

A “rough” graph of this quadratic function is given below and the “key” numbers are indicated. (2 pts. each)

i) What are the units for “d”? \( \text{feet} \)

ii) What is the numerical value of “g”? \( g = \frac{-96}{2(-16)} = 3 \) seconds.

For parts iii) & iv) answer either d, e, f, g or k & include appropriate units.

iii) What is the maximum height reached by the baseball? \( \text{feet} \)

iv) How long until the ball returns to the ground? \( \text{seconds} \)