Basic Algebra Exam 3 (Dougherty)
October 18, 2011

Directions: Scientific calculators are allowed for this exam. Follow directions for each problem carefully. Partial credit is possible if meaningful work is shown to support your answers.

1. Determine if the given point is on the given line.

<table>
<thead>
<tr>
<th>Point</th>
<th>Equation 1</th>
<th>Equation 2</th>
<th>Equation 3</th>
<th>Equation 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>(2, 5)</td>
<td>( y = 4x - 3 )</td>
<td>( 3x + y = 5 )</td>
<td>( y - 4 = 2(x + 3) )</td>
<td>( y = \frac{3}{2}x + 1 )</td>
</tr>
<tr>
<td>(2, 1)</td>
<td>( y = 4x - 3 )</td>
<td>( 3x + y = 5 )</td>
<td>( y - 4 = 2(x + 3) )</td>
<td>( y = \frac{3}{2}x + 1 )</td>
</tr>
<tr>
<td>(4, -3)</td>
<td>( y - 4 = 2(x + 3) )</td>
<td>( y = \frac{3}{2}x + 1 )</td>
<td>( y = \frac{3}{2}x + 1 )</td>
<td></td>
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<tr>
<td>(13, 8)</td>
<td>( y = \frac{3}{2}x + 1 )</td>
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</table>

2. For the following line, find the \( x \)-intercept and the \( y \)-intercept, plot these and use them to graph the line: \( 8x - 6y = 24 \).

\( x \)-intercept: ( , )

\( y \)-intercept: ( , )

3. Find and simplify the slope of the line

(a) Through (3, 8), (7, 13)     (b) Through (−3, 4), (5, −2)     (c) Through (3, 8), (10, 1)
4. For each line given below, find the slope.

\[ m = \]

\[ m = \]

5. Write an equation for the line below in slope-intercept form:

6. At 2:00 p.m., my Harley Davidson Sportster and I enter I-35 at mile marker 4. At 3:30 p.m. I exit I-35 at mile marker 112.

(a) What was my speed in miles per hour?

(b) If I used 2.25 gallons of gasoline to drive that distance, what is my fuel efficiency in miles/gallon?
7. Write a point-slope equation for the given line and graph it.

Through: \((-5, -4)\)  
Slope: 4

Through: \((-2, 1)\)  
Slope: \(-\frac{3}{5}\)

8. Write equations for each line described below:

(a) Through \((3, 1)\), with slope 5. Equation in slope-intercept form.

(b) Through \((3, -1)\) and \((-7, 9)\). Equation in point-slope form.

9. Simplify each of the following:

(a) \(x^8 \cdot x^4 = \)

(b) \(\frac{x^{24}}{x^6} = \)

(c) \((x^9)^5 = \)

(d) \((2x^5)^4 = \)

10. Find the slope and \(y\)-intercept of the line given by: \(6x - 5y = 10\).