Math 1090.003 Quiz 06
Spring 2016

Class ID #: Solutions       uID #:________________

Instructions:

• Please clear your desks and remove headphones and hats during the quiz.

• Show all work, as partial credit will be given where appropriate. If no work is shown, there may be no credit given.

• All final answers should be written in the space provided on the quiz and in simplified form. When needed, give your answer as an exact amount, i.e. a fraction or symbolic expression, except for dollar amounts which should be rounded to the nearest cent.

• Calculators are not allowed on this quiz. LABEL ALL LINES AND AXES!

• If your phone is out during the quiz it will be considered a cheating offense - put your phone away!

Quiz Graded for Participation!
1. Given $h(x) = x^3 + x^2 - 6x$: Sketch the polynomial below including as much detail as possible.

- **Y-intercept**: $(0, 0)$
- **X-intercepts**: $(0, 0)$, $(-3, 0)$, $(2, 0)$
- **Roots**:
  - $x^3 + x^2 - 6x = 0$
  - $x(x^2 + x - 6) = 0$
  - $x(x+3)(x-2) = 0$
- **Roots**:
  - $x = 0$
  - $x = -3$
  - $x = 2$
- **Degree** = 3
- **Sign of $a$** = 1
- **Shape of the graph**: up on right, down on left
2. Fill in the table of y-values for the given x-values for this function. Then, graph the curve.

\[ y(x) = \begin{cases} 
-x + 2 & x \leq 1, \quad x \in (-\infty, 1] \\
(x - 2)^2 + 3 & x > 1, \quad x \in (1, \infty) 
\end{cases} \]

<table>
<thead>
<tr>
<th>x</th>
<th>-1</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>y</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

\[ x = 1 \]

region 1

region 2

ghost pt.