Version 1

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~~236~~ Quiz 1

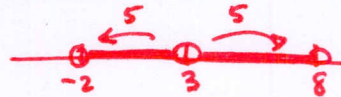January 20, 2011   Name _____ ** key ** _____

Work individually. You may use your Notebooks but no loose papers, printouts, photocopies, books, calculators, cell phones, or other resources.

1. Express the punctured interval of radius 5 around 3 four ways:

    2 a) as a picture on the real number line:

    8 pts

    2 b) using interval notation: $(-2, 3) \cup (3, 8)$

    2 c) in words, using the concept of distance:

    the set of values within distance 5 of 3, but not equal to 3

    2 d) with a double inequality involving an absolute value:

    $0 < |x - 3| < 5$

2. Consider the expression $\dfrac{3x^2 - x - 2}{x^2 - x}. \quad = \dfrac{(3x+2)(x-1)}{x(x-1)}$

    3 a) For which values of x is this expression equal to 0? $x = -2/3$
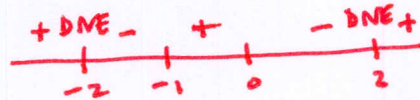
    6 pts

    3 b) For which values of x is this expression undefined? $x = 0, \ x = 1$

3. Solve the inequality $\dfrac{x(x+1)}{x^2 - 4} \geq 0$. Show your work clearly and put your final answer in interval notation with a box around it.

    6 pts

    $\dfrac{x(x+1)}{(x+2)(x-2)}$

    So we have ≥ 0 when:

    $\boxed{(-\infty, -2) \cup [-1, 0] \cup (2, \infty)}$.

    at $x = -10: \dfrac{--}{+} = +$

    at $x = -1.5: \dfrac{--}{--} = -$

    at $x = -.5: \dfrac{-+}{--} = +$

    etc.