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236 Quiz 1

January 20, 2011.

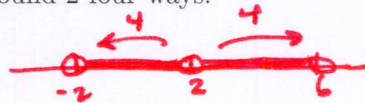
Name _____ *Key*

By printing my name I pledge to uphold the Honor Code.

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 4 around 2 four ways:

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



2 b) using interval notation:

$$(-2, 2) \cup (2, 6)$$

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

the set of values within distance 4 of 2, but not equal to 2

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

$$0 < |x - 2| < 4$$

8 pts

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

3 a) For which values of x is this expression equal to 0?

$$x = 0$$

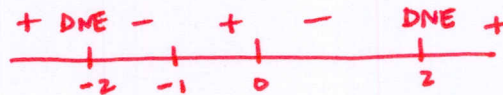
3 b) For which values of x is this expression undefined?

$$x = -2/3, x = 1$$

6 pts

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

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



so we have ≤ 0 when:

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

at $x = -1.5$: $\frac{-}{-} = +$
 at $x = -1$: $\frac{-}{-} = +$
 at $x = -0.5$: $\frac{-}{-} = +$
 etc.

6 pts