

out of 31

232 Quiz 0

Name: \*Key\* VI

January 16, 2014.

You may use your hand-written 232 Notebooks but no other materials or technology at all.

1. Determine whether each of the following is true (T) or false (F).

T (F)  $(x, y) = (2, 3)$  is a point on the graph of  $f(x) = (x - 2)(x - 3)$ .

T (F)  $(a, b) = (0, -3)$  is a solution to the system of equations  $\begin{cases} 3a + 2b = -6 \\ a - b = 3. \end{cases}$

T (F) If  $f(x) = x^3 + 1$ , then  $f(x^2) = (x^3 + 1)^2$ .

T (F) As limit forms,  $\frac{\infty}{\infty} = 1$ .

T (F) As limit forms,  $\infty - \infty = 0$ .

2 each  
10 pts

2. Short answer. Put your answers in the blanks to the left. No work is needed.

$2(\sqrt{x}+1)(\frac{1}{2}x^{-1/2})(x-7) - (\sqrt{x}+1)^2(1)$   
 $(x-7)^2$  Find the derivative of  $f(x) = \frac{(\sqrt{x}+1)^2}{x-7}$ . (Do NOT simplify.)

$(-2, \infty)$  Determine the interval or intervals on which the function  $f(x) = x^3 + 6x^2 - 2x + 1$  is concave up.

$f'(x) = 3x^2 + 12x - 2$   
 $f''(x) = 6x + 12 = 6(x+2)$

0 If  $f(x) = \frac{x^2 - 6x + 9}{x^2 - 8x + 15}$ , define a value for  $f(3)$  so that  $f$  is continuous at  $x = 3$ .

$\frac{(x-3)^2}{(x-3)(x-5)} = \frac{x-3}{x-5}$

$f'' = \frac{-1}{-2}$

$+2/3$  Calculate the limit  $\lim_{x \rightarrow \infty} \frac{3 - 2x^2}{(1-x)(4+3x)}$ .

this is 0 when  $x=3$

$(-\infty, -4] \cup [4, \infty)$  Write the domain of  $f(x) = \sqrt{x^2 - 16}$  in interval notation.

$\begin{array}{c} + & - & + \\ | & - & | \\ -4 & & 4 \end{array}$

8 If  $f$  is an invertible function with  $f(8) = 2$ , what is  $f^{-1}(2)$ ?

$\begin{array}{c} f \\ 8 \xrightarrow{\quad} 2 \\ \xleftarrow{\quad} \\ f^{-1} \end{array}$

$(1.5, 2) \cup (2, 2.5)$  Express the solution set of the inequality  $0 < |x - 2| < .5$  in interval notation.

$x \neq 2$

$\begin{array}{c} .5 & .5 \\ | & | \\ \leftarrow & \rightarrow \\ 1.5 & 2 & 2.5 \end{array}$

3 each  
21 pts