

Name: _____ I.D.#: _____

Answer all questions. Calculators are NOT allowed. 30 minutes.

1. Answer TRUE or FALSE for each of the following questions.

Write "True" or "False", do not use "T,F".

[50]

(a) $|(x - 2)^2| = x^2 + 4x + 4.$ _____

(b) The domain of the function $f(x) = \frac{\sqrt{x+1}}{x^2-4}$ is $[-1, 2) \cup (2, \infty).$ _____

(c) $0.\overline{9} < 1.$ _____

(d) $\lfloor -4.273 \rfloor = -4.$ _____

(e) $g(x) = x \cos\left(\frac{\pi}{2} + x\right)$ is an odd function. _____

(f) $|a - b| \leq |a| + |b|.$ _____

(g) The solution set of the inequality $9x^2 - 6x + 1 > 0$ consists of all real numbers $x.$ _____

(h) The solution set of the inequality $9x^2 - 6x + 1 < 0$ is the empty set \emptyset (i.e. there are no solutions). _____

(i) The solution set of $|7x^4 - 2x^3 - 13x - 8| < -2$ is the empty set $\emptyset.$ _____

(j) If P is a point in the third quadrant, and Q is a point in the fourth quadrant, then the line PQ joining them has positive slope. _____

TURN OVER FOR QUESTIONS 2 AND 3

For questions 2 and 3, show your work in the space provided.

2. Solve the inequality $\frac{1}{x-1} \geq \frac{1-x}{2}$. [25]

3. Find an equation of the line parallel to the y -axis passing through the vertex of the parabola $2y + 3x^2 - 6x - 2 = 0$. [25]

END OF PAPER