

CSCE 150

Pretest

Aug 25, 2000

Name :

SS#

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Instructions: Do all of the following questions. Show your work and explain your answers.

Do not use calculators.

Question 1: (25 points) Find the value of each of the following

(a) -3^2 .

(b) $(-3)^2(-3)^{27}(3)^{-25}$.

(c) $4 - 4 * 6 + 2 * 10$, where $*$ represents multiplication.

(d) $\frac{0}{-5+x+y}$, where $x > 0$ and $y < 0$, and $x + y \neq 5$.

(e) $\frac{-7777777}{0}$.

Question 2: (10 points) Use the formula

$$y^8 - x^8 = (y - x)(y + x)(y^2 + x^2)(y^4 + x^4)$$

to factor $y^8 - 1$.

Question 3: (10 points) Find the real number k , which satisfies:

The sum of half the number and three quarters of the number is equal to 5555.

Question 4: (25 points) Determine whether the following statements are true or false.

(a) $\sqrt{x+y} = \sqrt{x} + \sqrt{y}$, where x and y are positive.

(b) $\frac{2x}{3x+y} = \frac{2}{3+y}$, where $3x+y \neq 0$.

(c) $\frac{x+y}{z} = \frac{x}{z} + \frac{y}{z}$, where $z \neq 0$.

(d) $-\frac{-2}{3} > \frac{3}{4}$.

(e) The number 2 is a solution of $\frac{2x^3-16}{x^4+77777} = 0$.

Question 5: (10 points) Let $y + 55555 = \frac{3x-5}{2} + 55555$. Write x in terms of y (i.e., solve for x .)

Question 6: (10 points) Simplify the following expression

$$3(e^{\ln(x)})(e^{\ln(x^2)}),$$

where $x > 0$.

Question 7: (10 points) Let $g(x) = 3xf(x^2 - 1)$. Given that $f(24) = \frac{1}{90}$, find $g(5)$.