Math 1111 L College Algebra   Instructor: Dr. Predrag Punoševac

Exam 1

Student Name:_____

Student ID#:_____

Each problem is worth 5 points. Give a <u>complete</u> solution to receive the full credit!

1. Replace the question mark by $<$, $>$, or $=$, whichever is correct.

   (a) $\left(\frac{1}{2}\right)^{-2013}$? 2^{2013}

   (b) $\frac{1}{3}$? 0.33333333333

   (c) $\sqrt[6]{2}$? $\sqrt[3]{\frac{\sqrt{18}}{3}}$

   (d) e^{-2} ? $\frac{1}{e^{-2}}$

   (e) $\sqrt{2}$? 1.4142136

2. Find the real values z for which function $f(z) = \frac{\sqrt{3}}{z-7}$ is defined.

3. Suppose that $f(x) = 3x + 1$. Simplify the expression $\frac{f(x+h)-f(x)}{h}$ where $h \neq 0$.

4. Simplify expression:

$$\sqrt[3]{\frac{(yz)^{-3}}{yz\sqrt[7]{y}}}.$$

Express the answer so that all exponents are positive.

5. Find the remainder when $1 + x^3 - \frac{2}{3}x$ is divided by $\frac{2}{5}x + 1$.

6. Factor the polynomial $P_3(x) = x^3 + x - 2$. Hint: You might want to try grouping.

7. Perform the indicated operations and simplify. Leave your answer in factored form.

$$\frac{x+2}{x^2-1} - \frac{x+1}{x^2+x-2}$$

8. How many real solutions does the equation $x^2 - \pi x + 2013 = 0$ have?

9. Evaluate $\dfrac{1}{(3-i)^2}$.

10. Find the zeros of the logistic map $f(x) = 4x(1-x)$.