

Name: _____

PRACTICE FINAL – Math 105 – Fall 2007
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This exam contains 10 problems, worth a total of 100 points. For the first 6 problems I will give no partial credit, just write your final answer in the corresponding box. For the last 4 problems write out complete solutions and circle or box your answers. The use of books, calculators, cell phones, computers, notes, cheat sheets, and all similar aids is strictly prohibited.

1. When is $2x(1 - 2x)(1 - x) < 0$?

2. Find the inverse of $f(x) = \frac{2x + 1}{1 - x}$

3. If $\sqrt{4e^{-2x}}2e^{2x} = 1$, then $x =$

4. $\ln \frac{2}{x} + 2 \ln(x) - \ln(1 - x) = 0$ implies $x =$

5. $\lim_{n \rightarrow \infty} \left(1 + \frac{0.3}{n}\right)^{2n} =$

6. $\sin \frac{5\pi}{6} =$

Problem 7: Let $P(x) = (2x + 1)(x - 2)(x + 1)$.

(a) What is the leading term?

(b) What are the x -intercepts and what is the linear behavior of P near them?

(c) Sketch the graph of $y = P(x)$.

Problem 8: Let $R(x) = \frac{2x + 1}{1 - x}$.

(a) List all the asymptotes of $R(x)$.

(b) Show how to obtain R as the shift of a known graph

(c) Sketch the graph $y = R(x)$.

Problem 9: Consider the function $f(x) = 3 - 2x - x^2$.

(a) Put it in normal form by completing the squares,

(b) sketch its graph and carefully mark all the relevant points,

(c) determine if it has a maximum value or a minimum value and if so compute it.

Problem 10: $y = 3 \cos \left(\frac{3}{4}x - \frac{\pi}{2} \right) - 1$. Find

(a) the amplitude:

(b) the period:

(c) the phase shift:

(d) graph one complete period and mark the four relevant points.