

## MATH 120R - TEST 4 Review

- Decompose the following functions into two new functions,  $u$  and  $v$ , such that  $f(x) = u(v(x))$ .  $u(x) \neq x$ , and  $v(x) \neq x$ 
  - $f(x) = 2(\sin x)^2 + 5 \sin x + 1$
  - $f(x) = -e^{4x} + 3e^{2x} + e^{-2x}$
  - $f(x) = \frac{x^3 + |x|}{\sqrt{x}}$
  - $f(x) = \sqrt{1 + \sqrt{x}}$
- Find  $f(x), g(x), h(x)$  such that  $f(g(h(x))) = \frac{1}{x^2 + 1} + \sqrt{5x^2 + 5}$
- Look at problems 26-33 page 371.
- Find the inverse function of  $f(x) = \frac{\ln x - 5}{2 \ln x + 7}$ .
- Find  $f(f^{-1}(58))$  if  $f(x) = \tan x^3 + e^{5x^2+1}$ .
- Find exactly all the solutions to the equation  $\sin 2\theta + \sin \theta = 0$
- Let  $f(x) = \frac{1}{x^2}$ , and  $g(x) = x^2 + 9$ 
  - Find  $m(x) = \frac{f(x)}{g(x)}$ .
  - Find  $f^{-1}(x)$  for  $x < 0$ .
  - Find  $f(x)^{-1}$ .
- Look at problem 36 on page 372.
- Find a possible formula for the polynomial:
- Look at problem 46 (c), (d), (f) page 396.
- Sketch the graph of the polynomial:  $f(x) = (x - 5)^{13}(x + 4)^4(x - 3)$ .