

MTH 111 SUMMER 2 2002

Practice Problems for the final Exam

Also review the previous two sets of Practice Problems.

1. Find $(f \circ g)(x)$ and $(g \circ f)(x)$

(a) $f(x) = x - 4$, $g(x) = x + 4$

(b) $f(x) = x^2 - 2$, $g(x) = x - 2$

(c) $f(x) = \frac{1}{x+1}$, $g(x) = \frac{1-x}{2x}$

2. Find $f(x)$ and $g(x)$ such that $h(x) = (f \circ g)(x)$.

(a) $h(x) = (x-3)^2$; (b) $h(x) = \frac{1}{\sqrt{4x+3}}$; (c) $h(x) = \frac{x^2-1}{x^2-4}$

3. The following functions are one-to-one on their domain. Find a formula for the inverse of each of them.

(a) $f(x) = 3x - 2$; (b) $g(x) = \frac{x-4}{x+4}$; (c) $h(x) = x^3 + 1$

(d) $k(x) = x^2 - 1$, $x \geq 0$

4. Find each of the following. Do not use calculator.

(a) $\log_2 8$; (b) $\log_3 81$; (c) $\log 100$; (d) $\log 0.0001$; (e) $\ln e^5$.

5. Convert to logarithmic equations

(a) $10^4 = 10000$; (b) $5^{-2} = \frac{1}{25}$; (c) $e^4 = x$; $a^k = 4$

6. Convert to exponential equations

(a) $x = \log_3 5$; (b) $\ln(0.38) = -0.9676$

7. # 20 through 24, page 331.

8. #8, 9, 12, page 369

9. #5, 6, page 423

10. # 9, 12, 13 page 424

11. # 44, page 424

12. # 51 through 54, page 424.