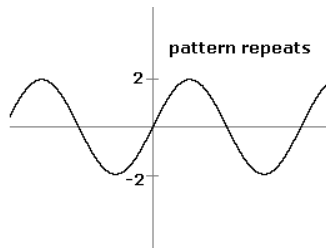
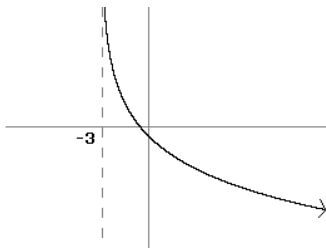


# Mathematics 114 Spring 2007 – Review for Test 1 (More Problems)

1. Write the equation of a line which is parallel to  $y = 2x + 4$ . Write the equation of a line which is perpendicular to this line.
2. Let  $f(x) = \sqrt{x^2 + 1} - x$  and  $g(x) = 2x + 3$ . Find  $f \circ g$ .

3. Find the domain and range of each of the functions graphed below.



4. Sketch the graph of any function that doesn't have an inverse, and explain why it has no inverse.

5. Find the inverse of  $f(x) = \frac{x^3}{4} - 7$ .

6. What is the inverse of  $\ln x$ ?

7. Let  $A(t)$  be the amount of money (in dollars) in an account after  $t$  years. In words, what are the meanings of  $A(6)$  and  $A^{-1}(1000)$ ?

8. Divide  $7x^3 + 15x^2 - 6x - 11$  by  $x + 2$ .

9. Find the zeroes of the following.

(a)  $x^4 + 2x^3 + 2x^2$       (b)  $3x^2(x - 4)^2 - 9x(x - 4)$       (c)  $\frac{3x^3 - 12}{x^5 + 1}$       (d)  $1 - x - \frac{1}{x}$       (e)  $e^x$

10. Find the horizontal and vertical asymptotes of the following functions.

(a)  $\frac{3x^2}{x^2 - 1}$       (b)  $\frac{x - 3}{x(x - 1)(x - 2)}$       (c)  $e^x$

11. Simplify the following.

(a)  $\log_5 \frac{1}{25}$       (b)  $e^{x + \ln 3}$       (c)  $e^{4 \ln x}$       (d)  $e^{-x/2} e^{x/2}$       (e)  $\ln e + e^0 + \ln \sqrt[3]{e}$