MODULE 4	INVERSE FUNCTIONS AND LONG DIVISION

Name:_____   Points:_____

Exercise 1. Find the inverse of the given function.

(a) $f(x) = \frac{1}{x-5} + 5$

(b) $f(x) = \frac{3x^2 - 7}{8 - 5x^2}$,   for $x \geq 0$

(c) $f(x) = x^2 + 3$,   for $x \geq 0$

(d) $f(x) = x^2 + 3$,   for $x \leq 0$

Exercise 2. Check if the functions are inverses of each other. If so, what are the domains and ranges where they are inverses?

(a) $f(x) = \sqrt{x + 6}$ and $g(x) = (x - 6)^2$

(b) $f(x) = |x|$ and $g(x) = x$

(c) $f(x) = |x|$ and $g(x) = -x$

Exercise 3. Divide using long division.

(a) $(x^4 + 3x^3 - 2x^2 + 9x + 8) \div (x + 4) =$

(b) $(6x^3 + 5x^2 - 14x - 10) \div (2x + 3) =$

Exercise 4.

(a)   Check that 2 is a root of $f(x) = x^5 - 4x^3 + 7x - 14$ and use this to factor f.

(b)   Check that -3 is a root of $f(x) = x^3 + 8x^2 + 18x + 9$ and use this to factor f.