**Name: _____** **Pre-Calculus**

# Spring Break – Take Home Test

**1.** Solve algebraically for x:

$$\sqrt{x^2 + x - 1} + 11x = 7x + 3$$

**2.** Solve algebraically for x:

$$x^4 + 4x^3 + 4x^2 = -16x$$

**3.** Solve algebraically for x:

$$\log_{(X+4)}(17x - 4) = 2$$

**4.** Solve $2x^2 - 12x + 4 = 0$ by completing the square, expressing the result in simplest radical form.

**5.** Solve algebraically for x:

$$\log_{(X+3)} \frac{x^3 + x - 2}{x} = 2$$

**6.** Solve the equation $8x^3 + 4x^2 - 18x - 9 = 0$ algebraically for all values of x.

**7.** Solve the equation $x^3 - 5x^2 - 4x + 20 = 0$ algebraically for all values of x.

**8.** Perform the indicated operations and simplify completely:

$$\frac{x^2-9}{x^2-5x} \times \frac{5x-x^2}{x^2-x-12} \div \frac{x-4}{x^2-8x+16}$$