Alg 2 Problems after Topic 6 Quiz Name:

1. Factor each completely.

a) $6x^3 - 14x^2 + 9x - 21$

b) $6x^4 + 10x^3 - 24x^2 - 40x$

2. Use division to determime the linear factors of $7x^4 - 54x^3 + 138x^2 - 103x - 42$ if $x^2 - 5x + 7$ is a factor. Then state all four solutions.

Alg 2 Problems after Topic 6 Quiz Name: ANSWERS

1. Factor each completely.

a) $6x^3 - 14x^2 + 9x - 21$

No GCF

	3x	−7
$2x^2$	$6x^3$	$-14x^2$
+3	$+9x$	-21

$(3x-7)(2x^2+3)$

b) $6x^4 + 10x^3 - 24x^2 - 40x$

GCF = 2x

$2x(3x^3+5x^2-12x-20)$

	3x	+5
x^2	$3x^3$	$+5x^2$
−4	$-12x$	-20

$2x(3x+5)(x^2-4)$

$2x(3x+5)(x\pm 2)$

2. Use division to determime the linear factors of $7x^4 - 54x^3 + 138x^2 - 103x - 42$ if $x^2 - 5x + 7$ is a factor. Then state all four solutions.

$$\begin{array}{r} 7x^2 - 19x - 6 \\ x^2-5x+7 \;\overline{)\; 7x^4 - 54x^3 + 138x^2 - 103x - 42} \\ -\;(7x^4 - 35x^3 + 49x^2) \\ \hline -19x^3 + 89x^2 - 103x \\ -\;(-19x^3 + 95x^2 - 133x) \\ \hline -6x^2 + 30x - 42 \\ -6x^2 + 30x - 42 \\ \hline 0 \end{array}$$

$(x^2-5x+7)(7x^2-19x-6)$

$(7x+2)(x-3)$

$b^2-4ac = -3$

$\frac{5\pm\sqrt{-3}}{2}$

$= \frac{5\pm i\sqrt{3}}{2}$

$x = -\frac{2}{7}, 3, \frac{5\pm i\sqrt{3}}{2}$