Alg2 Unit 1 HW #13 Name: Key No Work Period: _____

1. Simplify.

a. $\frac{14x^2-19x-3}{49x^2-1}$

$\frac{(2x-3)}{(7x-1)}$ $x \neq -\frac{1}{7}, \frac{1}{7}$

b. $\frac{20x-25}{3x-39} * \frac{x^2-10x-39}{10x+30}$

$\frac{(4x-5)}{6}$ $x \neq 13, -3$

2. Solve. $4\sqrt{1-5x} - 14 = 10$

$x = -7$

3. Given $y = x^3 + 3x^2 + 2x + 6$, use your graphing calculator to find the following:

a. # of real roots 1 Name them: $(-3, 0)$

b. # of imaginary roots 2 Name them: $\pm i\sqrt{2}$

c. # of relative minimums 1 Name them: $(-.42, 5.62)$

d. # of relative maximums 1 Name them: $(-1.58, 6.38)$

4. Solve by factoring.

a. $3x^2 - 4x - 15 = 0$

$x = 3$

$x = -\frac{5}{3}$

b. $21x - 18x^2 = 0$

$x = 0$

$x = \frac{7}{6}$

c. $169x^2 - 36 = 0$

$x = -\frac{6}{13}$

$x = \frac{6}{13}$

5. Divide using Long Division or Tabular Division. If there is no remainder, solve to find all roots. If there is a remainder, use the Remainder Theorem to prove your answer.

$$\frac{6x^3+17x^2-2}{2x-1}$$

Solve for roots or prove answer:

$3x^2+10x+5+\frac{3}{2x-1}$

6. Divide using Synthetic Division. If there is no remainder, solve to find all roots. If there is a remainder, use the Remainder Theorem to prove your answer.

$$(x^3-15x-18)\cdot(x+3)^{-1}$$

Solve for roots or prove answer:

x^2-3x-6

$\frac{3\pm\sqrt{33}}{2}$