Precalculus '13-14 Name:_____
PreCalc Basics
Round to 3 decimal places. score_____
Show all work.

1. Find the equation of the line thru $(-5, 6)$ and $(-7, 6)$.

2. Show the sign patterns for
$y = -6x^2(5x+4)(x-3)$

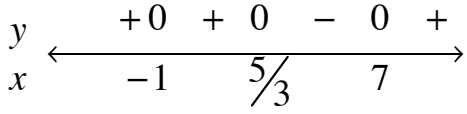
$y = (3-x)(x-6)^2(x-9)$

3. Find the zeros of $y = 6x^4 - 5x^3 - 150x^2 + 125x$ by factoring.

4. Use your graphing calculator to find **and sketch** a complete graph of $f(x) = x^4 - 21x^3 + 43x^2 - 14x - 8$, draw it, and state the window used.

5. Use your graphing calculator to find the zeros and the extremes of $f(x) = x^4 - 21x^3 + 43x^2 - 14x - 8$.

6. Find an inequality that has this sign pattern and solution:



and $x \in (-\infty, 1)$, $\left(-1, \frac{5}{3}\right)$, *or* $(7, \infty)$

7. Use synthetic division to find $f\left(-\frac{3}{4}\right)$ if $f(x) = 8x^4 - 6x^2 + 3$.

8. Simplify the following expression:

(a) $\dfrac{54 - 2x^3}{x^4 - 81} \div \dfrac{6}{x^2 + 9}$

(b) $\dfrac{x^2 + 5x}{x^2 + 6x + 5} \div \dfrac{x^3}{3x + 3} \cdot \dfrac{x}{x + 1}$

9. Show the sign pattern and solve $4x^4 - 3x^3 - 36x^2 + 27x > 0$

10. Show the sign pattern and solve $6x^3 + 17x^2 - 31x - 12 \geq 0$