

Long and Synthetic Division Homework

For #1-2, use long division:

1.) $(5y^2 - 6y + 7) \div (5y - 1)$

2.) $(3h^3 - 4h^2 + 2h + 4) \div (h^2 - 2h + 2)$

For #3-4, use synthetic division to factor completely:

3.) $(x^3 - 4x^2 + x + 6) \div (x - 2)$

4.) $(x^3 - 4x) \div (x + 2)$

For #5-8, use either method to determine whether or not each is a factor. Realize you need to recognize when to use each method:

5.)
$$\frac{3x^3 - 17x^2 + 15x - 25}{x - 5}$$

6.)
$$\frac{x^3 - 1}{x - 1}$$

7.)
$$\frac{6x^3 - 16x^2 + 17x - 6}{3x - 2}$$

8.)
$$\frac{x^4 + 3x^2 + 1}{x^2 - 2x + 3}$$

9.) Is $x - 5$ a factor of the function $f(x) = x^3 + x^2 - 27x - 15$? Show work supporting your answer.

10.)

Is $x + 1$ a factor of the function $f(x) = 2x^5 - 4x^4 + 9x^3 - x + 13$? Show work supporting your answer.