PreCalculus Honors – Some Review Problems

1. Solve using the geometric definition of absolute value: $\left|7-\dfrac{3}{2}x\right|<4$

2. Solve and express your solution on a number line and in interval notation:

$$\frac{x(7-x)(2x+1)}{(x-1)^2}\geq 0$$

3. Rewrite as a piecewise function using the algebraic definition of absolute value and graph the function: $y=|4x-1|$

4. $f(x)$ represents a linear function, $f(3)=-2$ and $f(-7)=1$. Find an equation for $f(x)$ in standard form.

5. A property owner wants to fence a rectangular garden plot with one side adjacent to a road. The fencing next to the road must be sturdier and costs \$5 per foot, but the other sides can be fenced with fencing that costs \$3 per foot. The garden must have an area of 1200 square feet. Find a function that models the cost of fencing the garden.

6. Factor completely:

   (a) $(3a+1)^2-6(3a+1)-8$
   (b) $1000x^3y^9-125a^{12}b^{15}$
   (c) x^4-15x^2+9

7. Express in simplest form and set any necessary restrictions:
$$\frac{4y^2-9}{2y^2-9y-18}\div\frac{2y^2+y-3}{y^2+5y-6}$$

8. Find the inverse of $y=-\dfrac{3}{2x-3}+5$.

9. Find the functions $f\circ g$, $g\circ f$, $f\circ f$, and $g\circ g$ and their domains.
   (a) $f(x)=\sqrt{x}$ and $g(x)=\sqrt{9-x}$
   (b) $f(x)=\dfrac{1}{\sqrt{x}}$ and $g(x)=x^2-x-12$