



\_\_\_\_\_ (5pts) 1. Solve  $5 - |15 - x| \leq 3$  and give final answer in interval notation.

\_\_\_\_\_ (5pts) 2. Find the difference quotient (average rate of change) from  $x$  to  $x + h$  of  $f(x) = 2x^2 - 3x + 5$ , and fully simplify.

$x =$  \_\_\_\_\_ (5pts) 3. Exactly solve  $x^{\frac{8}{3}} = 2x^{\frac{5}{3}} + 35x^{\frac{2}{3}}$ .

$y =$  \_\_\_\_\_ (5pts) 4. Find the equation of the line through point  $(5, -6)$  and that is perpendicular to the line  $y = \frac{x}{5} - 8$ .

\_\_\_\_\_ (5pts) 5. Fully simplify  $3 + \frac{2}{1 + \frac{4}{x+1}}$ .

\_\_\_\_\_ (5pts) 6. Fully simplify the expression  $\left(9wx^2y^{\frac{5}{3}}z^{\frac{-1}{4}}\right)^{\frac{1}{2}}$  and eliminate any negative exponents. Use exponents in your answer and not radicals.

(5pts) 7. Find the inverse function of  $g(x) = \frac{x+6}{2x-5}$ .

$g^{-1}(x) =$  \_\_\_\_\_

with a domain, in interval notation, of \_\_\_\_\_

(5pts) 8. Rewrite the function  $h(x) = |x + 6|$  without the absolute value symbol, that is, as a piecewise-defined function. Fully simplify.

$h(x) =$  \_\_\_\_\_

On the **next two problems**, let  $y = x^2 + 60x - 700$ .

\_\_\_\_\_ (5pts) 9. What is the vertex of this parabola?

10. Find the intercepts.

$y =$  \_\_\_\_\_ is the y-intercept. (1pt)

$x =$  \_\_\_\_\_  $x =$  \_\_\_\_\_ are the x-intercepts. (4pts)