Math 205 Quiz 2

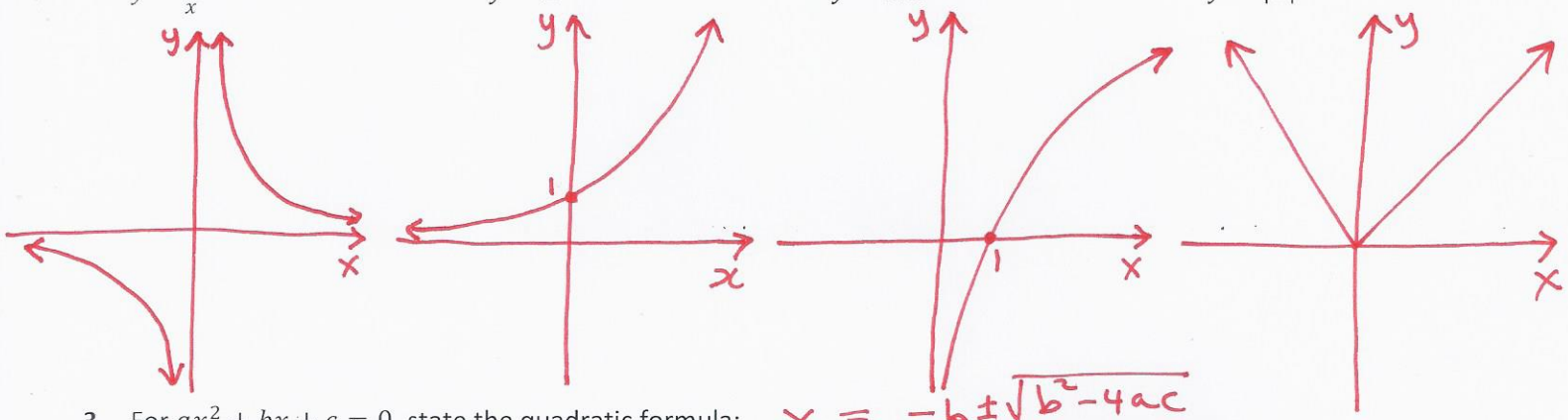
Name: ANSWERS

Instructions: No calculators! Answer all problems in the space provided! Do your rough work on scrap paper.

1. Expand and simplify:
   (a) $(a-b)^2 =$ $a^2-2ab+b^2$ (b) $(x+y)(a+b) =$ $ax+bx+ay+by$
   (c) $a(x+2) =$ $ax+2a$ (d) $(a+b)c =$ $ac+bc$

2. Sketch the following:

$y = \frac{1}{x}$ $y = 2^x$ $y = \ln x$ $y = |x|$



3. For $ax^2+bx+c=0$, state the quadratic formula: $x = \frac{-b \pm \sqrt{b^2-4ac}}{2a}$
   (Note: the quadratic formula is an equation.)

4. Find the x- and y-intercepts of $y = 6x^2+x-1$: x-int: $x=-1/2, x=1/3$, y-int: $y=-1$

5. If $f(x) = x^2-x+1$, compute and simplify $\frac{f(x+h)-f(x)}{h} =$ $2x-1+h$

6. Factor: $2x^3-2x^2-4x =$ $2x(x+1)(x-2)$

7. Simplify: $\frac{x^3+2x^2-25x-50}{x-5} =$ $(x+5)(x+2)$

8. Complete the rules:
   (a) $a^x \cdot a^y =$ a^{x+y} (b) $\frac{a^x}{a^y} =$ a^{x-y} (c) $(a^x)^y =$ a^{xy}

Bonus:

1. For a function $f(x)$, write the formula for its average rate of change between $x=a$ and $x=b$:
   $f_{ave} =$ $\frac{f(b)-f(a)}{b-a}$

2. Simplify $e^{2\ln x^2 - 3\ln y} =$ x^4/y^3

3. If $f(x) = \sqrt{x^3+1}$ and $g(x) = 3x^2-4$, find and simplify $g \circ f(x) =$ $3x^3-1$