Name: Exam 3

Sec 4 **Name:** _____
Winter 2019
Exam 3 **Time Limit: 90 min**

- **DO NOT open the exam booklet until you are told to begin. You should write your name and section number at the top and read the instructions.**
- Organize your work, in a reasonably neat and coherent way, in the space provided. If you wish for something to not be graded, please strike it out neatly. I will grade only work on the exam paper, unless you clearly indicate your desire for me to grade work on additional pages.
- You may use any results from class, homework or the text, but you must cite the result you are using. You must prove everything else.
- You needn't spend your time rewriting definitions or axioms on the exam.
- Show all of your work. You may not receive full credit for correct answers if supporting work is not demonstrated.

Problem	Points	Score
1	10	
2	10	
3	7	
4	10	
5	15	
Total:	52	

- When you have completed your test, hand it to me and go have a great weekend!

1. Solve for x,

   (a) (5 points) $\log_{16} x = \dfrac{1}{2}$

   (b) (5 points) $\log_{\frac{1}{2}}(2x+1) = 4$

2. Solve each inequality,

   (a) (5 points) $9x + 13 \geq 8x$

   (b) (5 points) $8 \geq 2x + 5 > -1$

3. Find the domain of the following functions.

   (a) (3 points) $f(x) = x^2 - 3x + 1$

   (b) (4 points) $g(x) = \dfrac{\sqrt{x}}{x - 1}$

4. For the points $(0, -2)$ and $(4, 0)$,

   (a) (5 points) find the slope of the line passing through the points.

   (b) (5 points) find the equation of the line passing through the points.

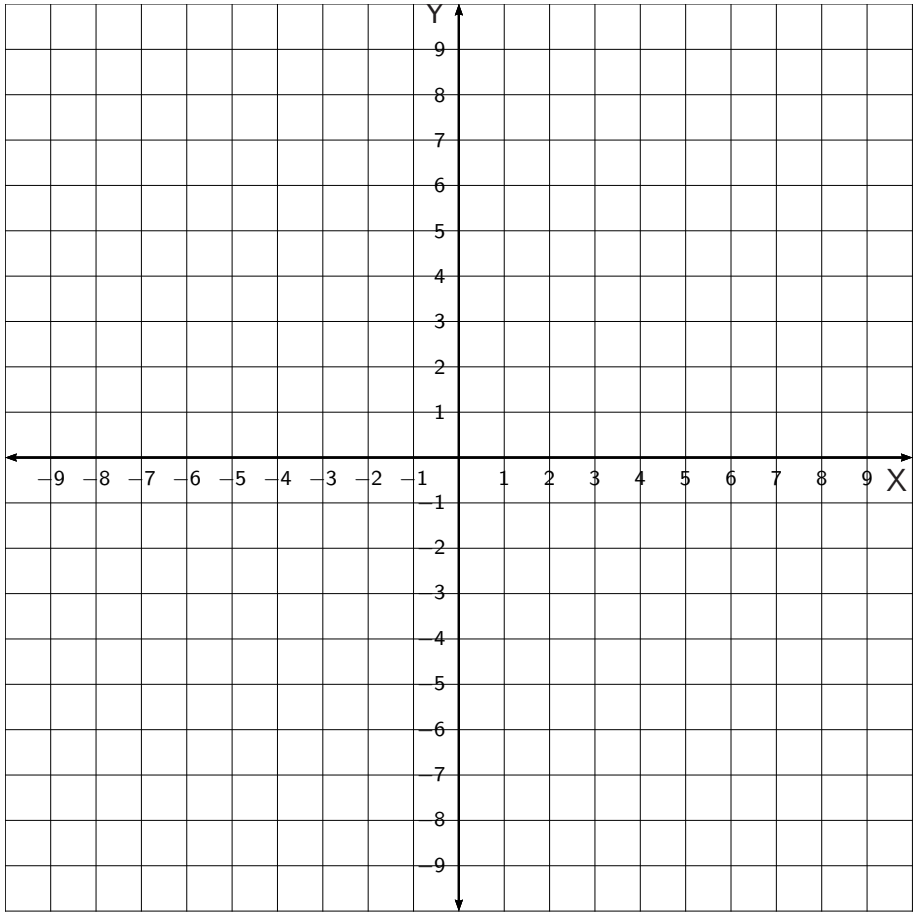
5. for the function $g(x) = x^2 + 6x + 5$,

   (a) (3 points) find the vertex.

   (b) (3 points) find the x-intercepts.

   (c) (3 points) find the y-intercept.

   (d) (6 points) Graph the function,



Formulas

Exponents

$a^0 = 1$

$a^m \cdot a^n = a^{m+n}$

$\dfrac{a^n}{a^m} = a^{n-m}$

$(a^n)^m = a^{mn}$

$(ab)^n = a^n b^b$

$\left(\dfrac{a}{b}\right)^n = \dfrac{a^n}{b^n}$

$\left(\dfrac{a}{b}\right)^{-n} = \left(\dfrac{b}{a}\right)^n$

Product/factors

$(a+b)^2 = a^2 + 2ab + b^2$

$(a-b)^2 = a^2 - 2ab + b^2$

$a^2 - b^2 = (a-b)(a+b)$

$a^3 + b^3 = (a+b)(a^2 - ab + b^2)$

$a^3 - b^3 = (a-b)(a^2 + ab + b^2)$

Radicals

$\sqrt[n]{xy} = \sqrt[n]{x}\sqrt[n]{y}$

$\sqrt[n]{\dfrac{x}{y}} = \dfrac{\sqrt[n]{x}}{\sqrt[n]{y}}$

$x^{\frac{m}{n}} = \sqrt[n]{x^m} = (\sqrt[n]{x})^m$

Square Root Property

If $X^2 = k$ and $k \geq 0$ then $X = \pm k$.

Quadratic formula

$\Delta = b^2 - 4ac$, $\dfrac{-b \pm \sqrt{\Delta}}{2a}$

Parabolas

x-coordinate of vertex $x_v = \dfrac{-b}{2a}$

lines

General formula $Ax + By = C$

Standard formula $y = mx + b$

Point slope formula $y - y_1 = m(x - x_1)$

slope $m = \dfrac{y_2 - y_1}{x_2 - x_1}$

distance and midpoint

$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

$\left(\dfrac{x_1 + x_2}{2}, \dfrac{y_1 + y_2}{2}\right)$

Logarithms

$\log_b y = x$ if and only if $b^x = y$

$\log_a a = 1$, $\log_a 1 = 0$, $\log_a a^x = x$

$\log_b y = \dfrac{\log y}{\log b}$