# Math 1513 - College Algebra
**Exam #1 - 2018.09.21**

Name: _____

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1. Find the equations of the lines passing through the point $(2, -4)$ which are (a) parallel and (b) perpendicular to the line $y = \dfrac{3}{2}x + 2$.

2. Perform the complex multiplication $(2 + \dfrac{1}{2}i)(3 - 4i)$, express your answer in standard complex form $a + bi$.

3. Perform the complex division $(2 + \dfrac{1}{2}i) \big/ (3 + 4i)$, express your answer in standard complex form $a + bi$.

4. Solve the following equation: $\sqrt{2x+1} - \sqrt{x} = 1$

5. Solve the following equation: $2x + \dfrac{3}{x-1} = -5$

6. Solving the following inequality, express your answer in interval notation. $1 < |4x - 1| < 2$

7. Determine the domain of the following function: $f(x) = \sqrt{\dfrac{2x+1}{3x-2}}$

8. For each of the following functions, determine if they are (I) even, (II) odd, or (III) neither.

(a) $f(x) = 2\sqrt{x^2 + 1} - 1$

(b) $g(x) = 2\sqrt{x^2 + 1} - x^3 + 1$

(c) $h(x) = 2x\sqrt{x^2 + 1} - x^3 + 3x$

(d) $k(x) = 2x\sqrt{x^2 + 1} - x^2 + 1$

9. Solve the following equation: $-2(x^2 + 3) = -2x^2 + 6$

10. Solve the following equation: $-2(x^2 + 3) = -2x^2 - 6$