Topics and Practice Problems for Advanced Algebra (MAALG) Placement Test

General Information: The exam consists of 25 multiple choice questions. Problems generally fall into one of 3 categories – simplify, solve, or identify. The problems below are representative of those on the exam, but the list is not necessarily complete. The wording of the actual problems may vary slightly.

Simplify

- Find $x + \frac{2}{x} - 3$ if $x = 1/7$
- $\sqrt{81y^6 + 16y^6} =$
- $\frac{2a}{3b} + \frac{3a}{2b} =$
- $\frac{h+2}{h^2-16} \cdot \frac{3h+12}{5h+10} =$
- $32^{1/5} \cdot \left(\frac{1}{16}\right)^{3/4} =$
- $\log_2 32 =$
- Simplify $|7 - w|$ if $w > 7$
- Rationalize $\frac{2}{1-\sqrt{3}}$
- $\frac{t^3+8}{t+2} =$
- $\sqrt{3\sqrt{9f^8g^{10}}} =$
- Find $f(h(x))$ if $f(x) = \frac{x+1}{2-x}$ and $h(x) = 3x - 2$
- $\frac{(3+i)(1-2i)}{(2+i)(2-i)} =$

Solve

- $\frac{3}{x} - 1 = \frac{7}{4}$
- $\log_{10} k = 4$
- Find m if $f(y) = y^2 + 2m + 1$ and $f(2) = 3$.
- Find x if $2a(x + d) = dx - b$
- $x^2 + 3x = -9$
- $3^x = 10$
- $|1 - 3x| < 5$
- $x^2 - 18x < 19$
- $x - 1 + \sqrt{2x} = 0$

- Solve the system of equations for x and y:

$$\begin{aligned} x + 2y &= \frac{7}{2} \\ 3x - 4y &= -\frac{9}{2} \end{aligned}$$

Identify

- Identify the graph of $y - 7x - 2 = 0$ from a set of 4 choices.
- Identify the graph of $x^2 + y = 4$ from a set of 4 choices.
- Identify the factors of $a^4 - 81$ from a set of 4 choices.
- Identify the region in the xy plane where $x + y < 6$, $1 \leq x \leq 3$ from a set of 4 choices.