## Algebra II Worksheet \#2 Unit 1 selected solutions

Simplify each of the following expressions.

1. $3(5 x+7)+2(3 x-5)=\underline{21 x+11}$
2. $5(x-7)-3(2 x+3)=-x-44$ $(15 x+21)+(6 x-10)$
$(5 x-35)+(-6 x-9)$

Solve each of the following equations. Show your process steps neatly organized.
7. $2 x+2(2 x-3)=36$
10. $5(2 x-1)-8(x+1)=4(2 x+3)-2(5 x-3)$
$2 x+4 x-6=36$
$(10 x-5)+(-8 x-8)=(8 x+12)+(-10 x+6)$

$$
\begin{gathered}
6 x-6=36 \\
6 x=42 \\
x=7
\end{gathered}
$$

$$
2 x-13=-2 x+18
$$

$$
4 x=31
$$

$$
x=\frac{31}{4}
$$

Solve each of the following for the indicated variable. Show your process steps neatly organized.
13. $\mathbf{y}=\mathbf{m}(\mathbf{x}-\mathbf{a})+\mathbf{c}$ solve for $\mathbf{a}$
14. $\quad R(a+b)=a b \quad$ solve for $b$
$\mathbf{y}=\mathbf{m x}-\mathbf{a m}+\mathbf{c}$
$\mathbf{a m}=\mathbf{m x}+\mathbf{c}-\mathbf{y}$

$$
\mathbf{a}=\frac{\mathbf{m x}+\mathbf{c}-\mathbf{y}}{\mathbf{m}}
$$

$$
\begin{aligned}
& \mathbf{R a}+\mathbf{R b}=\mathbf{a b} \\
& \mathbf{R a}=\mathbf{a b}-\mathbf{R b} \\
& \mathbf{R a}=(\mathbf{a}-\mathbf{R}) \mathbf{b} \\
& \mathbf{b}=\frac{\mathbf{R a}}{\mathbf{a}-\mathbf{R}}
\end{aligned}
$$

Solve each of the following word problems algebraically. Show your process steps neatly organized. (Use only one variable in your solutions please.)
23. The cost of a burger is 9 cents more than twice the cost of a soda. The cost of a hot dog is 24 cents more than the cost of a soda. If 3 burgers, 7 hotdogs and 10 sodas cost a total of $\$ 14.60$, then what is the cost of each item?

|  | cost each | $\begin{array}{r} 3(2 x+9)+7(x+24)+10 x=1460 \\ 6 x+27+7 x+168+10 x=1460 \end{array}$ |
| :---: | :---: | :---: |
| soda: | $x$ cents | $23 x+195=1460$ |
| burger: | $2 \mathrm{x}+9$ cents | $23 \mathrm{x}=1265$ |
| hot dog: | $x+24$ cents | $\mathrm{x}=55$ |
|  |  | $2 \mathrm{x}+9=119$ |
|  |  | $x+24=79$ |

A soda costs 55¢, a burger costs $\$ 1.19$, and a hot dog costs 79 d .

