1.4 #65: Simplify the expression $9a - [7 - 5(7a - 3)]$: The order of operations insists that we resolve things inside symbols of grouping first, so we should try to remove the innermost symbols of grouping (the parentheses) first. We must distribute $-5$ over $(7a - 3)$; the distributive law allows us to rewrite this as $-35a - 5(-3) = -35a + 15$, so $9a - [7 - 5(7a - 3)] = 9a - [7 - 35a + 15]$. Now we should simplify what’s in the brackets. There are two constant terms (7 and 15) that we can combine $9a - [22 - 35a] = 9a - 22 - (-35a) = 9a - 22 + 35a = 44a - 22$.

1.4 #86: Evaluate the expression $\frac{x}{x^2 - y}$ (a) when $x = 0$ and $y = 10$, (b) when $x = 4$ and $y = 4$: (a) Replace the appropriate values to get $\frac{0}{0 - 10} = \frac{0}{-10} = 0$ (b) Substitute the appropriate values to get $\frac{4}{4 - 4} = \frac{4}{0}$ which is undefined. So, we cannot evaluate the expression at these values.

1.5 #17: Translate the phrase “Thirty percent of the list price $L$” into an algebraic expression: Recall that “percent of” requires us to turn the percent into a decimal and multiply. The expression is $0.30L$.

1.5 #58: Write an expression that represents the verbal quantity “The total hourly wage for an employee when the base pay is $11.65 per hour plus 80 cents for each of $q$ units produced per hour”: First we should make sure our given numbers are written in a common unit - write 80 cents as .80 so that the money in our expression is consistently represented in dollars. Then the amount above the base pay can be represented as $0.80q$ (if you are stuck on this step, think about how you would figure out the additional amount if the employee produced 4 units). All together, the wage is $11.85 + .80q$.

2.1 28: Solve the equation $10 - 6x = -5$, and check the answer if there is one solution: One good method to solve linear equations in one variable is to move all constants to one side and the variables to the other. For this reason, subtracting 10 from both sides is a good first step: $10 - 6x = -5$
$-6x = -5 - 10$
$-6x = -15$

Once we have achieved this, to get $x$ by itself involves division. Here, divide both sides by $-6$:
$-6x = -15$
$-6x\left(\frac{1}{-6}\right) = -15\left(\frac{1}{-6}\right)$
$x = \frac{-15}{-6}$

We can simplify this answer by cancelling the minus signs and cancelling a 3 from each of the numerator and the denominator:
$x = \frac{-15}{-6}$
$x = \frac{15}{6}$
$x = \frac{5}{2}$

Since we obtained one answer, we are directed to check it. Always do this in the original equation:
$10 - 6\left(\frac{5}{2}\right) \stackrel{?}{=} -5$
$10 - 15 \stackrel{?}{=} -5$
$-5 \stackrel{?}{=} -5$
2.1 #29 Solve the equation \( 4y - 3 = 4y \), and check the answer if there is one solution:

Again we’ll try to move all constants on one side and all variables to the other. Let’s subtract \( 4y \) from both sides:

\[
\begin{align*}
4y - 3 &= 4y \\
-3 &= 4y - 4y \\
-3 &= 0
\end{align*}
\]

This statement is always false. Put another way, this statement is false for any value of \( y \). Since our steps in solving the equation do not change the solution set, and the solution set was empty for the last equation, the solution set is empty for the original equation. That is, this equation has no solution.