

## More equation Solving

Find and state the solution to each equation.

a.  $4x + 7 = 27$

b.  $3x - 6 = 3x - 6$

c.  $7x + 2 = 9x + 2$

d.  $4 - x = 8 - x$

**Stop!! Do not turn the page!!**

**The solution to a linear equation in one variable always has one of three forms.**

- There is exactly one solution to the equation. If the solution to the equation is the number  $k$ , then **the solution set is  $\{k\}$** .
- There are **no** solutions to the equation. These type equations are called **contradictions**. We call **the solution set** to these equations **the empty set** ( written as  $\emptyset$  or  $\{ \}$  ).
- Every real number is a solution to the equation. These type equations are called **identities**. We call **the solution set** to these equations **all real numbers** ( written as  $\mathbb{R}$  ).

**Recognizing identities and contradictions**

- An equation that is equivalent to an equation of form  $k = k$  where  $k$  is a real number is itself an identity,
- An equation that is equivalent to an equation of form  $a = b$  where  $a$  and  $b$  are two *different* numbers is itself a contradiction,



*Be careful!!*

Don't confuse your solution process with your check. When *checking* your solution, arriving at  $k = k$  simply means that your solution is correct – not that every real number satisfies the original equation!

BOO BOO™



*Be careful!!*

If you have found a “solution” and your solution doesn't check – it does **not** mean that the equation has no solution!! It means that you've got to go find where you made a mistake!

e.  $5x - (x - 7) = 1 - 2x + 2(x + 13)$

f.  $4x + 3\left(x + \frac{2}{3}\right) = 9x + 2$

e.  $\frac{3}{4}x - \frac{3}{2} = \frac{5}{4}\left(\frac{3}{5}x - \frac{24}{5}\right)$

f.  $6 - (x + 2) = -(x - 4)$