

7. Solve the following equations and check your solutions in each case:

- If there is **only one surd**, isolate it on one side and then square both sides and solve.
- If there are **two surds**, move one to each side of the equation. Square both sides and isolate any remaining surds. Square both sides again to remove any remaining surd.
- Solve the resulting equation.
- Check your answers.

(iv) $\sqrt{3x-5} = x-1$

SQUARE BOTH SIDES

$$3x-5 = x^2-2x+1$$

$$x^2-5x+6 = 0$$

$$(x-3)(x-2) = 0$$

$$x=3 \quad | \quad x=2$$

Check: $\sqrt{3(3)-5} \stackrel{?}{=} 3-1$

$$\sqrt{9-5} \stackrel{?}{=} 2$$

$$\sqrt{4} \stackrel{?}{=} 2 \quad \checkmark$$

$\sqrt{3(2)-5} \stackrel{?}{=} 2-1$

$$\sqrt{6-5} \stackrel{?}{=} 1$$

$$\sqrt{1} \stackrel{?}{=} 1 \quad \checkmark$$

both answers are valid

8. Solve each of these equations and check each solution:


(iv) $\sqrt{3x-2} = \sqrt{x-2} + 2$

SQUARE BOTH SIDES

$$3x-2 = (x-2) + 4\sqrt{x-2} + 4$$

$$3x-2 = x + 4\sqrt{x-2} + 2$$

$$2x-4 = 4\sqrt{x-2}$$

SQUARE BOTH SIDES 

Remember...

$$(a+b)^2 = a^2 + 2ab + b^2$$



$$4x^2 - 16x + 16 = 16(x-2)$$

$$4x^2 - 16x + 16 = 16x - 32$$

$$4x^2 - 32x + 48 = 0$$

$$x^2 - 8x + 12 = 0$$

$$(x-6)(x-2) = 0$$

$$x=6 \quad | \quad x=2$$