

3.2 solve by Factoring

step

- ① Put the equation in standard form & equal to zero.
- ② Factor (using any ^{appropriate} method)
- ③ Use ZPP (zero-product property)
if $a \cdot b = 0$ then $a = 0$ or $b = 0$
- ④ solve each factor

Ex.1 ^{Solve} $(x-7)(x+2) = 0$ already factored
go to step 3

$$x-7=0 \text{ or } x+2=0$$
$$\boxed{x=7 \text{ or } x=-2}$$

Ex.2 solve $x^2 + 4x - 32 = 0$
 $(x-4)(x+8) = 0$

$\begin{array}{r} 1 \ 32 \\ 2 \ 16 \\ 4 \ 8 \end{array}$ $\begin{array}{r} -32 \\ -4 \quad 8 \\ \hline 4 \quad 1 \end{array}$

$$x-4=0 \text{ or } x+8=0$$
$$\boxed{x=4 \text{ or } x=-8}$$

Ex.3 $x^2 - 6x + 6 = -2$
 $\quad \quad \quad +2 \quad +2$
 $x^2 - 6x + 8 = 0$
 $(x-2)(x-4) = 0$

$\begin{array}{r} 1 \cdot 8 \\ 2 \cdot 4 \end{array}$ $\begin{array}{r} 8 \\ -2 \quad -4 \\ \hline -6 \quad 1 \end{array}$

$$x-2=0 \quad x-4=0$$
$$\boxed{x=2 \quad x=4}$$

EX. 4 solve $7x^2 - 28x = 0$
 $7x(x - 4) = 0$

$$\frac{7x}{7} = \frac{0}{7} \quad x - 4 = 0$$

$$\boxed{x = 0 \text{ or } x = 4}$$