

two solutions  
 $(2x-1)^2 + 4 = 13$   
 single x-variable

x<sup>2</sup> term AND x term  
 $x^2 + 10x + 16 = 0$   
 FACTOR:  
 $\begin{array}{r|rr} 1 & 16 & \\ -1 & -16 & \\ \hline 2 & 8 & \\ -2 & -8 & \\ \hline 4 & 4 & \\ -4 & -4 & \end{array}$

$x^2 - 6x + 4 = 0$   
 ①  $a=1$   $b=-6$   $c=4$   
 $\begin{array}{r|rr} 1 & 4 & \\ -1 & -4 & \\ \hline 2 & 2 & \\ -2 & -2 & \end{array}$  none of these pairs add to -6 (DNF)

QUADRATIC FORMULA:  
 Apply to trinomials that do not factor.

$ax^2 + bx + c = 0$   
 $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

SOLVE:  $(x+2)(x+8) = 0$   
 $x+2=0 \rightarrow x=-2$   
 $x+8=0 \rightarrow x=-8$

②  $x = \frac{-(-6) \pm \sqrt{(-6)^2 - 4 \cdot 1 \cdot 4}}{2 \cdot 1}$

③  $x = \frac{6 \pm \sqrt{36 - 16}}{2} = \frac{6 \pm \sqrt{20}}{2} = \frac{6 \pm 2\sqrt{5}}{2} = 3 \pm \sqrt{5}$   
 OR  
 $5.24, 0.76$

ex  $3x^2 + 4x = 2$   
 $3x^2 + 4x - 2 = 0$   
 $a=3$   $b=4$   $c=-2$

$x = \frac{-(-4) \pm \sqrt{(-4)^2 - 4 \cdot 3 \cdot (-2)}}{2 \cdot 3}$

$x = \frac{-4 \pm \sqrt{16 + 24}}{6} = \frac{-4 \pm \sqrt{40}}{6} = \frac{-4 \pm 2\sqrt{10}}{6} = \frac{-2 \pm \sqrt{10}}{3}$

ex  $x^2 + 2x - 8 = 0$   
 $a=1$   $b=2$   $c=-8$   
 $x = \frac{-(2) \pm \sqrt{(2)^2 - 4 \cdot 1 \cdot (-8)}}{2 \cdot 1}$

$x^2 + 2x - 8 = 0$   
 $(x+4)(x-2) = 0$   
 $x=-4$   $x=2$

$x = \frac{-2 \pm \sqrt{4 + 32}}{2} = \frac{-2 \pm \sqrt{36}}{2}$  ← PERFECT SQUARE!  
 $= \frac{-2 \pm 6}{2} \rightarrow \frac{-2+6}{2} \rightarrow \frac{4}{2} \rightarrow \boxed{2}$   
 $\rightarrow \frac{-2-6}{2} \rightarrow \frac{-8}{2} \rightarrow \boxed{-4}$