

$$\textcircled{6} \quad \frac{1}{3}x^2 - 3 = 0$$

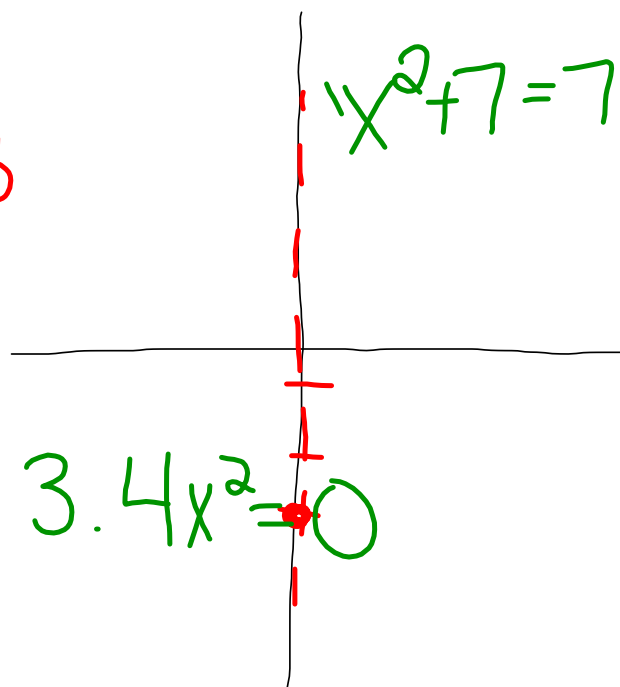
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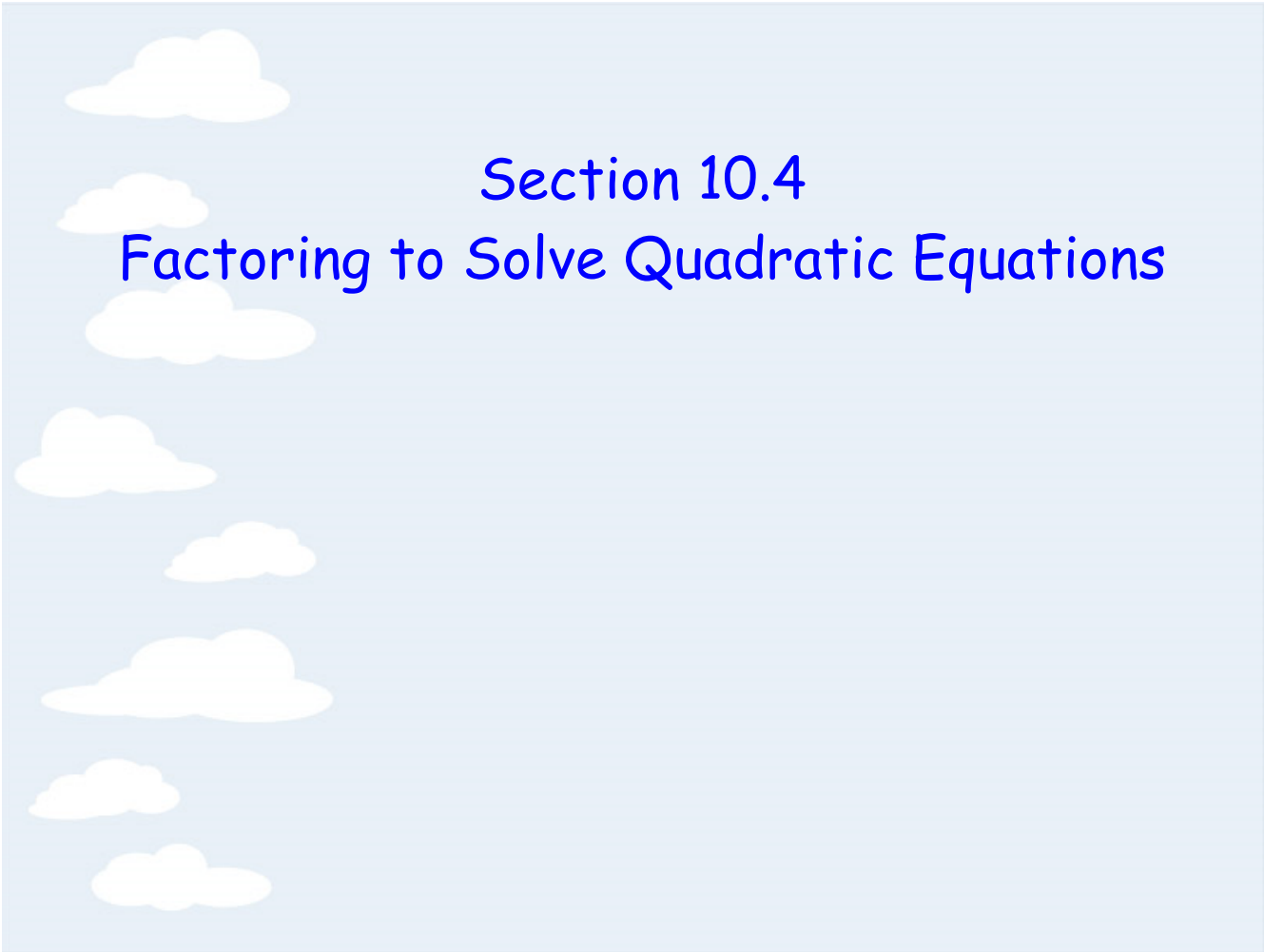
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$$\cancel{3} \cdot \frac{1}{\cancel{3}}x^2 = 3 \cdot 3$$

$$\sqrt{x^2} = \sqrt{9}$$

$$x = \pm 3$$





Section 10.4  
Factoring to Solve Quadratic Equations



**Property****Zero-Product Property**

For every real number  $a$  and  $b$ , if  $ab = 0$ , then  $a = 0$  or  $b = 0$ .

**Example** If  $(x + 3)(x + 2) = 0$ , then  $x + 3 = 0$  or  $x + 2 = 0$ .

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

$$x+3=0$$

$$x+2=0$$

$$x=-3$$

$$x=-2$$

Use the Zero-Product Property to solve each equation.

1.  $(x - 3)(x - 7) = 0$

$$(x - 3) = 0$$

$$x = 3$$

$$x - 7 = 0$$

$$x = 7$$

6.  $(4a - 7)(3a + 8) = 0$

$$4a - 7 = 0$$

$$a = \frac{7}{4}$$

$$3a + 8 = 0$$

$$a = -\frac{8}{3}$$

Solve by factoring.

$$9. b^2 + 3b - 4 = 0$$

$$\begin{array}{r} -4b^2 \\ -b \quad 4b \\ 3b \end{array}$$

$$(b+4)(b-1) = 0$$

$$b-1=0 \quad b+4=0$$

$$b=1 \quad b=-4$$

$$19. 3q^2 + 16q = -5$$

$$3q^2 + 16q + 5 = 0$$

$$(3q^2 + 15q)(q + 5) = 0$$

$$3q(q+5) + 1(q+5) = 0$$

$$(q+5)(3q+1) = 0$$

$$q+5=0$$

$$q = -5$$

$$3q+1=0$$

$$q = -\frac{1}{3}$$

$$17. n^2 = 6n$$

$$n^2 - 6n = 0$$

$$n(n-6) = 0$$

$$ab=0$$

$$n=0$$

$$n-6=0$$

$$n=6$$



Solve:

$$20. 4y^2 = 25$$