

Section 4 – Topic 4
Solving Quadratic Equations by Factoring –
Special Cases – Part 2

$$ax^2 + bx + c$$

Consider the binomial $4x^2 - 9$. Write the binomial as a trinomial.

Factor the trinomial.

$\sqrt{4x^2} = 2x$	a.c -36	0
$\sqrt{9} = 3$	6 6	$\frac{6}{4} - \frac{6}{4}$

$$\left(x + \frac{3}{2}\right)\left(x - \frac{3}{2}\right)$$

$$(2x + 3)(2x - 3)$$

$$49k^2 - 64 = 0$$

$4x^2 - 9$ is an example of the difference of two squares.

Things to note about the difference of squares: $a^2 - b^2$.

$$(7k+8)(7k-8)=0$$

➤ Both terms are perfect squares.

➤ It's the difference of squares, **NOT** the sum.

$$\text{➤ } (a^2 - b^2) = (a + b)(a - b).$$

$$7k+8=0$$

$$7k=-8$$

$$k = \frac{-8}{7}$$

$$7k-8=0$$

$$7k=8$$

$$k = \frac{8}{7}$$

Let's Practice!

1. Solve the equation $49k^2 = 64$.

$$\begin{aligned} & \frac{49}{49} \\ k^2 &= \frac{64}{49} \\ k &= \pm \frac{8}{7} \end{aligned}$$

2. Factor $4x^2 - 36x^6$.

$$\begin{aligned} \sqrt{4x^2} &= 2x \\ \sqrt{36x^6} &= 6x^3 \\ (2x+6x^3)(2x-6x^3) \end{aligned}$$

3. Factor $9s^6 - r^8$.

$$(3s^3+r^4)(3s^3-r^4)$$

Try it!

4. Solve the equation $256x^2 = 196$.

$$x^2 = \frac{196}{256}$$

$$x = \pm \frac{14}{16} = \boxed{\begin{array}{c} + \frac{7}{8} \\ - \frac{7}{8} \end{array}}$$

5. Factor $32a^2b - 50b^3$

$$2b(16a^2 - 25b^2)$$

$$2b(4a+5b)(4a-5b)$$

6. Factor $x^2 + 144$.

not possible

BEAT THE TEST!

1. The perfect square trinomial $ax^2 + bx + c$ is equivalent to $(x - 0.9)^2$. Which of the following is the sum of b and c ?

- (A) -1.8
- (B) -0.99
- (C) 0.81
- (D) 2.61

$-1.8 + .81$

$(x - 0.9)(x - 0.9)$
 $x^2 - 0.9x - 0.9x + .81$
 $x^2 - 1.8x + .81$

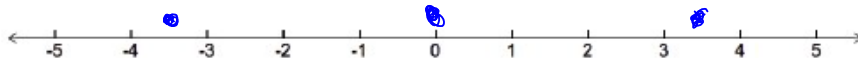
2. Create an expression that represents the complete factorization of $P(a) = 8a^3 - 98a$.

$\rightarrow 2a(4a^2 - 49)$

$2a = 0$
 $a = 0$

$2a(2a - 7)(2a + 7)$

Mark with a point on top of the number line the possible solutions for $P(a) = 0$.



$2a - 7 = 0$
 $2a = 7$
 $a = 7/2$
 $a = 3.5$

