

Perfect Square Trinomials

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9:35 AM

PRE-CALCULUS 11 QUADRATIC EQUATIONS PERFECT SQUARE TRINOMIALS

The following form perfect square trinomials. Factor each one and show both ways your answer can be written.

$$\begin{array}{c} 25 \\ \textcircled{5} \quad \textcircled{5} \\ 10 \end{array} \quad x^2 + 10x + 25$$
$$\boxed{(x + 5)(x + 5) \quad \text{or} \quad (x + 5)^2}$$

$$\begin{array}{c} 9 \\ \textcircled{-3} \quad \textcircled{-3} \\ -6 \end{array} \quad x^2 - 6x + 9$$
$$\boxed{(x - 3)(x - 3) \quad \text{or} \quad (x - 3)^2}$$

$$\begin{array}{c} 49 \\ \textcircled{7} \quad \textcircled{7} \\ 14 \end{array} \quad -2x^2 - 28x - 98$$
$$-2(x^2 + 14x + 49)$$
$$\boxed{-2(x + 7)(x + 7) \quad \text{or} \quad -2(x + 7)^2}$$

$$\begin{array}{c} 64 \\ \textcircled{-8} \quad \textcircled{-8} \\ -16 \end{array} \quad \frac{1}{4}x^2 - 4x + 16$$
$$\frac{1}{4}(x^2 - 16x + 64)$$
$$\boxed{\frac{1}{4}(x - 8)(x - 8) \quad \text{or} \quad \frac{1}{4}(x - 8)^2}$$

In order for a trinomial to be a perfect square, what properties must it have?

Both sets of brackets must be exactly the same.

What would have to be added to each of the following to make it a perfect square trinomial? Then show the factored form of the expression.

$$x^2 + 12x + \underline{36} \quad \boxed{(x + 6)^2}$$

$$x^2 - 18x + \underline{81} \quad \boxed{(x - 9)^2}$$

$$x^2 - 20x + \underline{100} \quad \boxed{(x - 10)^2}$$

$$x^2 + 9x + \underline{\frac{81}{4}} \quad \boxed{\left(x + \frac{9}{2}\right)^2}$$

$$x^2 + \frac{2}{3}x + \underline{\frac{1}{9}} \quad \boxed{\left(x + \frac{1}{3}\right)^2}$$

$$x^2 - \frac{3}{5}x + \underline{\frac{9}{100}} \quad \boxed{\left(x - \frac{3}{10}\right)^2}$$

$$x^2 + ax + \underline{\frac{a^2}{4}} \quad \boxed{\left(x + \frac{a}{2}\right)^2}$$

To Solve

a) Take the "b" value and divide by 2.

b) Then square the answer. This becomes the missing "c" value.

Assignment: Perfect Square Trinomial Assignment #1 - 18

PRE-CALCULUS 11
QUADRATIC EQUATIONS
PERFECT SQUARE TRINOMIALS ASSIGNMENT

A. Factor the following perfect square trinomials.

1) $x^2 - 8x + 16$

2) $x^2 + 20x + 100$

3) $x^2 + 16x + 64$

4) $x^2 + 30x + 225$

5) $x^2 - 2x + 1$

6) $x^2 - 6x + 9$

7) $3x^2 + 12x + 12$

8) $-2x^2 + 24x - 72$

9) $-x^2 - 10x - 25$

10) $\frac{1}{2}x^2 - 6x + 18$

11) $\frac{1}{3}x^2 + \frac{4}{3}x + \frac{4}{3}$

12) $-\frac{1}{2}x^2 + 7x - \frac{49}{2}$

B. What would have to be added to each of the following to make it a perfect square trinomial? Then show the factored form of the expression.

13) $x^2 + 10x + \underline{\hspace{2cm}}$

14) $x^2 - 24x + \underline{\hspace{2cm}}$

15) $x^2 + 3x + \underline{\hspace{2cm}}$

16) $x^2 - 7x + \underline{\hspace{2cm}}$

17) $x^2 + \frac{1}{2}x + \underline{\hspace{2cm}}$

18) $x^2 - \frac{2}{3}x + \underline{\hspace{2cm}}$

Answers

1) $(x-4)^2$

2) $(x+10)^2$

3) $(x+8)^2$

4) $(x+15)^2$

5) $(x-1)^2$

6) $(x-3)^2$

7) $3(x+2)^2$

8) $-2(x-6)^2$

9) $-(x+5)^2$

10) $\frac{1}{2}(x-6)^2$

11) $\frac{1}{3}(x+2)^2$

12) $-\frac{1}{2}(x-7)^2$

13) 25, $(x+5)^2$

14) 144, $(x-12)^2$

15) $\frac{9}{4}$, $\left(x+\frac{3}{2}\right)^2$

16) $\frac{49}{4}$, $\left(x-\frac{7}{2}\right)^2$

17) $\frac{1}{16}$, $\left(x+\frac{1}{4}\right)^2$

18) $\frac{1}{9}$, $\left(x-\frac{1}{3}\right)^2$