

Factoring Difference of Squares

$$a^2 - b^2 = (a + b)(a - b)$$

Note: Sum of Squares does not factor

$$a^2 + b^2 \text{ does not factor}$$

Name: _____

Use the difference of squares formula to factor the following. Don't forget to factor out the GCF if necessary.

<p>1. $x^2 - 9$ $= x^2 - 3^2$ $= (x + 3)(x - 3)$</p>	<p>2. $y^2 - 25$ $= y^2 - 5^2$ $= (y + 5)(y - 5)$</p>	<p>3. $x^2 + 1$ $= x^2 + 1^2$ does not factor as it is sum of squares</p>
<p>4. $16 - t^2$ $= 4^2 - t^2$ $= (4 + t)(4 - t)$</p>	<p>5. $4x^2 - 1$ $= (2x)^2 - 1^2$ $= (2x + 1)(2x - 1)$</p>	<p>6. $16 - 9x^2$ $= 4^2 - (3x)^2$ $= (4 + 3x)(4 - 3x)$</p>
<p>7. $36t^2 - s^2$ $= (6t)^2 - s^2$ $= (6t + s)(6t - s)$</p>	<p>8. $4p^2 - 9q^2$ $= (2p)^2 - (3q)^2$ $= (2p + 3q)(2p - 3q)$</p>	<p>9. $x^3 - 64x$ $= x(x^2 - 64)$ factor out GCF $= x(x^2 - 8^2)$ $= x(x + 8)(x - 8)$</p>
<p>10. $2t^4 - 18t^2$ $= 2t^2(t^2 - 9)$ factor out GCF $= 2t^2(t^2 - 3^2)$ $= 2t^2(t + 3)(t - 3)$</p>	<p>11. $4x^2y^4 - 49$ $= [(2xy^2)^2 - 7^2]$ $= (2xy^2 + 7)(2xy^2 - 7)$</p>	<p>12. $x^4 - 81$ $= (x^2)^2 - 9^2$ $= (x^2 + 9)(x^2 - 9)$ $= (x^2 + 9)(x^2 - 3^2)$ $= (x^2 + 9)(x + 3)(x - 3)$ Don't forget to continue factoring as much as possible Note: $x^2 + 9 = x^2 + 3^2$ does not factor as it is sum of squares</p>