

Intermediate Algebra
Skill-Builder # PF – 9
Recognizing Special Binomials

Strategy: Decide if BOTH terms are either perfect squares or perfect cubes. Then check if the form is one of the following:

Sum of Squares $\square^2 + \circ^2$

Difference of Squares $\square^2 - \circ^2$

Sum of Cubes $\square^3 + \circ^3$

Difference of Cubes $\square^3 - \circ^3$

Examples

1. $8 - x^3 = \square^3 - \circ^3$

2. $y^4 - 25 = \square^2 - \circ^2$

3. $16a^4 - b^8 = \square^2 - \circ^2$

4. $\frac{1}{8}n^3 - 64m^6 = \square^3 + \circ^3$

5. $\frac{4}{25}p^2 - \frac{27}{64}w^3$ is NOT A SPECIAL BINOMIAL since it does NOT fit any of the 4 forms; the first term is a perfect square while the second term is a perfect cube

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Decide whether the given expression is a special binomial and write the answer in the correct form.

<p>1. $4x^4 - 25y^{10}$</p> <p>Sum of Squares <input type="checkbox"/>² + <input type="checkbox"/>²</p> <p>Difference of Squares <input type="checkbox"/>² - <input type="checkbox"/>²</p> <p>Sum of Cubes <input type="checkbox"/>³ + <input type="checkbox"/>³</p> <p>Difference of Cubes <input type="checkbox"/>³ - <input type="checkbox"/>³</p> <p>Not a Special Binomial <input type="checkbox"/> <input type="checkbox"/></p>	<p>2. $36a^2 + 121b^6$</p> <p>Sum of Squares <input type="checkbox"/>² + <input type="checkbox"/>²</p> <p>Difference of Squares <input type="checkbox"/>² - <input type="checkbox"/>²</p> <p>Sum of Cubes <input type="checkbox"/>³ + <input type="checkbox"/>³</p> <p>Difference of Cubes <input type="checkbox"/>³ - <input type="checkbox"/>³</p> <p>Not a Special Binomial <input type="checkbox"/> <input type="checkbox"/></p>	<p>3. $8w^6 + x^9k^{12}$</p> <p>Sum of Squares <input type="checkbox"/>² + <input type="checkbox"/>²</p> <p>Difference of Squares <input type="checkbox"/>² - <input type="checkbox"/>²</p> <p>Sum of Cubes <input type="checkbox"/>³ + <input type="checkbox"/>³</p> <p>Difference of Cubes <input type="checkbox"/>³ - <input type="checkbox"/>³</p> <p>Not a Special Binomial <input type="checkbox"/> <input type="checkbox"/></p>
<p>4. $\frac{1}{8}w^{36} - \frac{27}{p^{21}}$</p> <p>Sum of Squares <input type="checkbox"/>² + <input type="checkbox"/>²</p> <p>Difference of Squares <input type="checkbox"/>² - <input type="checkbox"/>²</p> <p>Sum of Cubes <input type="checkbox"/>³ + <input type="checkbox"/>³</p> <p>Difference of Cubes <input type="checkbox"/>³ - <input type="checkbox"/>³</p> <p>Not a Special Binomial <input type="checkbox"/> <input type="checkbox"/></p>	<p>5. $25n^{12} + 64m^{16}$</p> <p>Sum of Squares <input type="checkbox"/>² + <input type="checkbox"/>²</p> <p>Difference of Squares <input type="checkbox"/>² - <input type="checkbox"/>²</p> <p>Sum of Cubes <input type="checkbox"/>³ + <input type="checkbox"/>³</p> <p>Difference of Cubes <input type="checkbox"/>³ - <input type="checkbox"/>³</p> <p>Not a Special Binomial <input type="checkbox"/> <input type="checkbox"/></p>	<p>6. $\frac{8x^3}{y^6} + \frac{k^9}{27d^6}$</p> <p>Sum of Squares <input type="checkbox"/>² + <input type="checkbox"/>²</p> <p>Difference of Squares <input type="checkbox"/>² - <input type="checkbox"/>²</p> <p>Sum of Cubes <input type="checkbox"/>³ + <input type="checkbox"/>³</p> <p>Difference of Cubes <input type="checkbox"/>³ - <input type="checkbox"/>³</p> <p>Not a Special Binomial <input type="checkbox"/> <input type="checkbox"/></p>

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Answers

1. difference of squares $(2x^2)^2 - (5y^5)^2$

2. sum of squares $(6a)^2 + (11b^3)^2$

3. sum of cubes $(2w^2)^3 + (x^3k^4)^3$

4. difference of cubes $\left(\frac{1}{2}w^{12}\right)^3 - \left(\frac{3}{p^7}\right)^3$

5. sum of squares $(5n^6)^2 + (8m^8)^2$

6. sum of cubes $\left(\frac{2x}{y^2}\right)^3 + \left(\frac{k^3}{3d^2}\right)^3$