4.3

Date: Section:

Objective:

Review:

Difference of Squares: $\boldsymbol{a^2 - b^2 = (a+b)(a-b)}$ Examples: Factor completely. $x^2 - 49$ $= (x+2)(x-2)$ $x^2 - 16$ $= (3x+4)(3x-4)$	**Remember:** $\boldsymbol{i = \sqrt{-1}}$ **and** $\boldsymbol{i^2 = -1}$

You may have been told that a sum of squares such as $a^2 + 4$ is not factorable.
But it is factorable, just not with real numbers.

Sum of Squares:

$\boldsymbol{a^2 + b^2} = a^2 - i^2b^2$
$= (a)^2 - (ib)^2$
$= \boldsymbol{(a+ib)(a-ib)}$

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So… $\boldsymbol{x^2 + 4} = x^2 - i^2 \cdot 2^2$
$= (x)^2 - (i \cdot 2)^2$
$= (x+2i)(x-2i)$

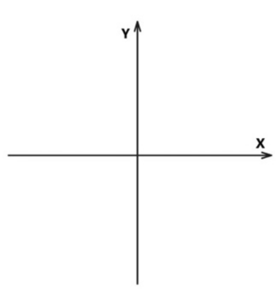
Now you try- Factor Completely:

1. $x^2 + 9$ 2. $y^2 + 25$ 3. $16a^2 + 4$ 4. $36b^2 + 1$ 5. $m^2 + 49n^2$

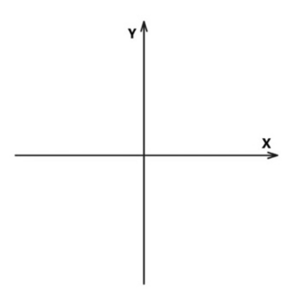
Find the zeros by solving. What do those zeros look like on the graph and why?

1. $\boldsymbol{y = x^2 + 16}$ **2.** $\boldsymbol{y = x^2 + 4x + 8}$

Sketch $\boldsymbol{y = x^2 + 16}$



Sketch $\boldsymbol{y = x^2 + 4x + 8}$



2. $y = 8x^3 + 1$

Sketch $y = 8x^3 + 1$