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Powers of i

$$\mathrm{i}^1 = \mathrm{i}$$

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Powers of i

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Notice the pattern we are getting!

Powers of i

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$$i^6 = -1$$
$$i^7 = -i$$
$$i^8 = 1$$
$$i^9 = i$$
$$i^{10} = -1$$
$$i^{11} = -i$$
$$i^{12} = 1$$

Notice the pattern we are getting!

Powers of i

$$i^1 = i$$
$$i^2 = -1$$
$$i^3 = -i$$
$$i^4 = 1$$
$$i^5 = i$$
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In general, $i^m = i^n$ if m and n differ by a multiply of 4.

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$$\mathrm{i}^3 = -\mathrm{i}$$
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$$\mathrm{i}^6 = -1$$
$$\mathrm{i}^7 = -\mathrm{i}$$
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In other words, $\mathrm{i}^m = \mathrm{i}^n$ if $m - n$ is a multiply of 4.

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So, we can figure out all powers of i with this and knowing the first 4.