

WE DO: Practice

Investigating Graphs of Polynomial Functions

Complete the table to identify the leading coefficient, degree, and end behavior of each polynomial function.

	Polynomial	Leading Coefficient	Degree	End Behavior
1.	$P(x) = x^2 + 3x + 6$			As $x \rightarrow -\infty$, $P(x) \rightarrow +\infty$ As $x \rightarrow +\infty$, $P(x) \rightarrow +\infty$
2.	$P(x) = -3x^3 + 2x - 5$			As $x \rightarrow -\infty$, $P(x) \rightarrow$ _____ As $x \rightarrow +\infty$, $P(x) \rightarrow$ _____
3.	$P(x) = 2x^4 + 2x^3 + 3$			As _____ As _____
4.	$P(x) = -6x^5 + 3x^3 + 1$			As _____ As _____

Graph the function $P(x) = x^3 + 4x^2 - x - 4$.

5. Identify possible rational roots.

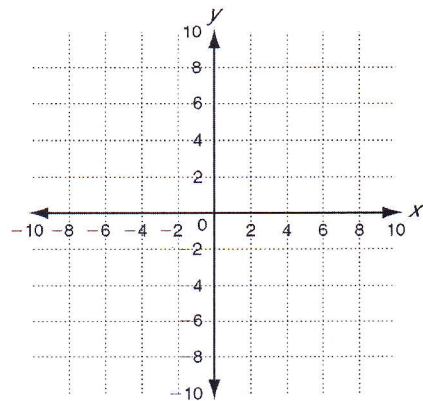
6. Test the roots using synthetic division to find a zero.

7. Use your results from the synthetic division to factor the polynomial to find all zeros.

8. Find other points to use to draw the graph, such as the y-intercept and points between the zeros such as $P(-2)$ and $P(-3)$.

9. Identify the end behavior of the graph.

10. Sketch the graph of the function.



YOU DO: Practice

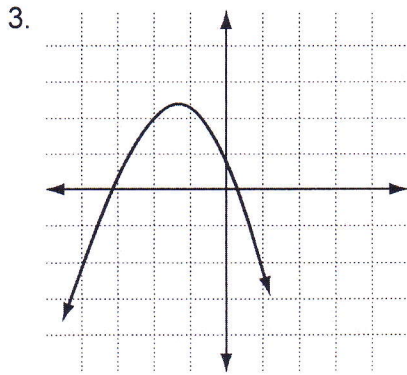
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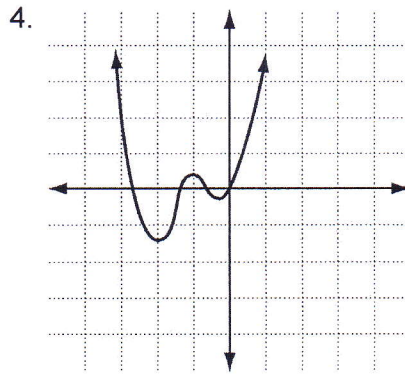
Identify the leading coefficient, degree, and end behavior.

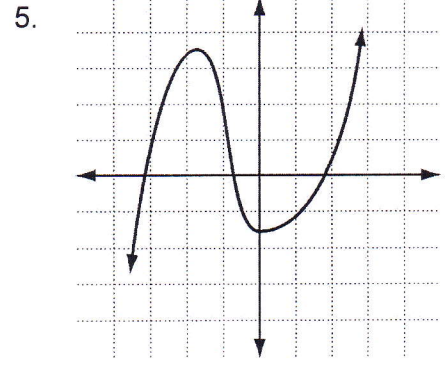
1. $P(x) = 2x^5 - 6x^3 + x^2 - 2$

2. $Q(x) = -4x^2 + x - 1$

Identify whether the function graphed has an odd or even degree and a positive or negative leading coefficient.







Graph the function $P(x) = x^3 + 6x^2 + 5x - 12$.

6. Identify the possible rational roots.

7. Identify the zeros.

8. Describe the end behavior of the function.

9. Sketch the graph of the function.

