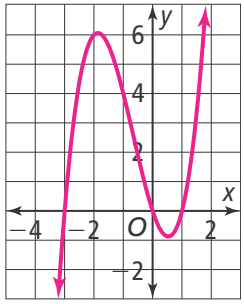
2-5 Lesson Quiz

Zeros of Polynomial Functions

1. What are all the zeros of $f(x) = x^3 + 2x^2 - 3x$? Use this information to sketch the graph of f.

Zeros: **−3, 0, 1**



2. Find the zeros of $f(x) = -x^3 - 2x^2 + 7x - 4$. Then describe the behavior of the graph of f at each zero.

Ⓐ 4, −1; As $x \to -\infty$, $f \to -\infty$. When $-1 < x < 4$, $f < 0$. At $x = 4$, f is tangent to the x-axis, so when $x > 1$, $f \to \infty$.

Ⓑ −4, 1; As $x \to -\infty$, $f \to -\infty$. When $-4 < x < 1$, $f > 0$. At $x = 1$, f is tangent to the x-axis, so when $x > 1$, $f \to -\infty$.

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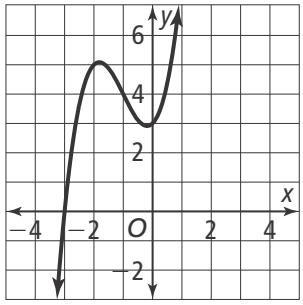
3. What are the real and complex zeros of the function $y = x^3 + 3x^2 + x + 3$, which is graphed at the right?



Ⓐ −3, −1, and 1

Ⓑ −3, i, and $-i$

Ⓒ 3, i, and $-i$

Ⓓ −3, −2, and 3

4. What x-values are solutions of $x^3 + 5x^2 - x - 7 = x^2 + 6x + 3$? Use a graphing calculator to find points of intersection between the two functions.

The graphs intersect at $x =$ **−5**, $x =$ **−1**, and $x =$ **2**.

5. What values of x are solutions of the inequality $x^3 - 4x > 0$?

The inequality is true for **$-2 < x < 0$** and **$x > 2$**.