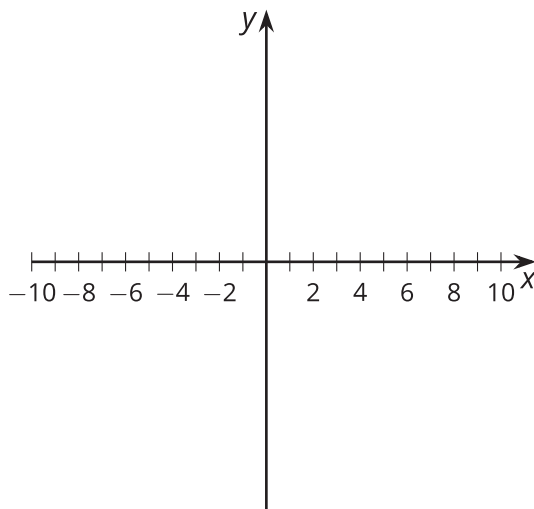
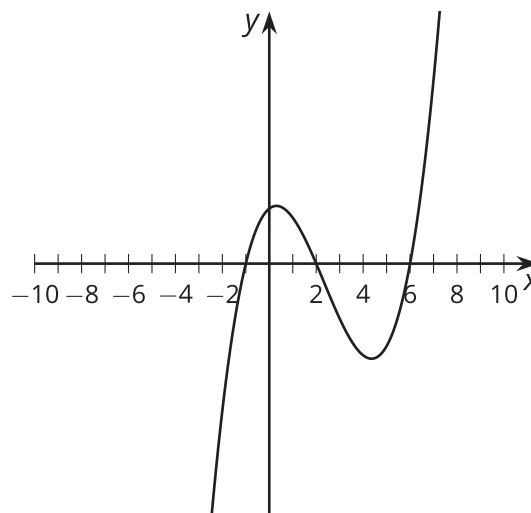


Lesson 14 Practice Problems

1. We know these things about a polynomial function, $f(x)$: it has exactly one relative maximum and one relative minimum, it has exactly three zeros, and it has a known factor of $(x - 4)$. Sketch a graph of $f(x)$ given this information.

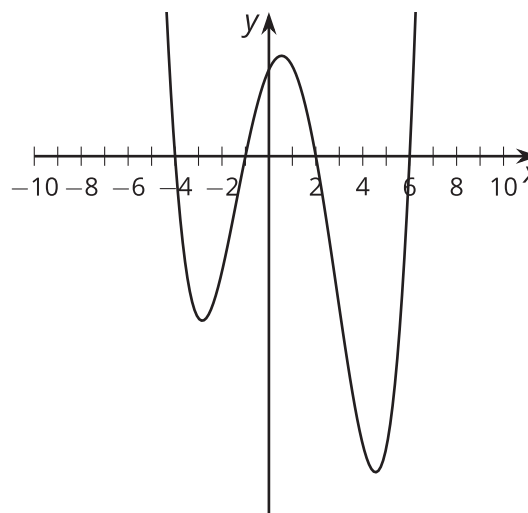


2. Mai graphs a polynomial function, $f(x)$, that has three linear factors $(x + 6)$, $(x + 2)$, and $(x - 1)$. But she makes a mistake. What is her mistake?



3. Here is the graph of a polynomial function with degree 4.

Select **all** of the statements that are true about the function.

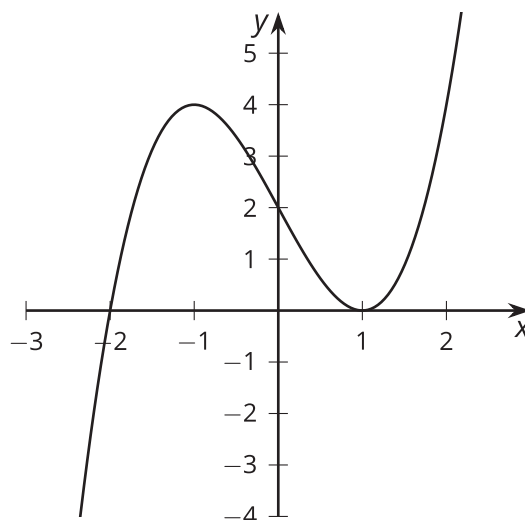


- A. The leading coefficient is positive.
- B. The constant term is negative.
- C. It has 2 relative maximums.
- D. It has 4 linear factors.
- E. One of the factors is $(x - 1)$.
- F. One of the zeros is $x = 2$.
- G. There is a relative minimum between $x = 1$ and $x = 3$.

4. State the degree and end behavior of $f(x) = 2x^3 - 3x^5 - x^2 + 1$. Explain or show your reasoning.

(From Unit 2, Lesson 9.)

5. Is this the graph of $g(x) = (x - 1)^2(x + 2)$ or $h(x) = (x - 1)(x + 2)^2$? Explain how you know.



(From Unit 2, Lesson 10.)

6. Kiran thinks he knows one of the linear factors of $P(x) = x^3 + x^2 - 17x + 15$. After finding that $P(3) = 0$, Kiran suspects that $x - 3$ is a factor of $P(x)$, so he sets up a diagram to check. Here is the diagram he made to check his reasoning, but he set it up incorrectly. What went wrong?

	x^2	$4x$	-5
x	x^3	$4x^2$	$-5x$
3	$3x^2$	$12x$	15

(From Unit 2, Lesson 12.)

7. The polynomial function $B(x) = x^3 + 8x^2 + 5x - 14$ has a known factor of $(x + 2)$. Rewrite $B(x)$ as a product of linear factors.

(From Unit 2, Lesson 13.)