### 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.
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1. 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?
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1. Here is the graph of a polynomial function with degree 4.
* Select **all** of the statements that are true about the function.
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	1. The leading coefficient is positive.
	2. The constant term is negative.
	3. It has 2 relative maximums.
	4. It has 4 linear factors.
	5. One of the factors is $(x−1)$.
	6. One of the zeros is $x=2$.
	7. There is a relative minimum between $x=1$ and $x=3$.
1. 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.)
1. Is this the graph of $g(x)=(x−1)^{2}(x+2)$ or $h(x)=(x−1)(x+2)^{2}$? Explain how you know.
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* (From Unit 2, Lesson 10.)
1. 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?
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|  |  |  |  |
| --- | --- | --- | --- |
| *
 | * $x^{2}$
 | * $4x$
 | * -5
 |
| * $x$
 | * $x^{3}$
 | * $4x^{2}$
 | * $-5x$
 |
| * 3
 | * $3x^{2}$
 | * $12x$
 | * 15
 |

* (From Unit 2, Lesson 12.)
1. 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.)



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