

LESSON 5.5 Assignment

Name _____ Date _____

The Choice Is Yours
Comparing Polynomials in Different Representations

1. Analyze the given representations of the polynomial functions $f(x)$, $g(x)$, $h(x)$, and $k(x)$. Then, answer each question and justify your reasoning.

<p>The cubic function $f(x)$ with x-intercepts $(-4, 0)$, $(-1, 0)$, and $(2, 0)$ and y-intercept $(0, 8)$.</p>	$g(x) = (x - 3)^2(x + 2)^2$												
<table border="1" style="margin-left: auto; margin-right: auto; border-collapse: collapse; text-align: center;"> <thead> <tr> <th style="padding: 5px;">x</th> <th style="padding: 5px;">$h(x)$</th> </tr> </thead> <tbody> <tr> <td style="padding: 5px;">-2</td> <td style="padding: 5px;">-7</td> </tr> <tr> <td style="padding: 5px;">-1</td> <td style="padding: 5px;">-4</td> </tr> <tr> <td style="padding: 5px;">0</td> <td style="padding: 5px;">-3</td> </tr> <tr> <td style="padding: 5px;">1</td> <td style="padding: 5px;">-4</td> </tr> <tr> <td style="padding: 5px;">2</td> <td style="padding: 5px;">-7</td> </tr> </tbody> </table>	x	$h(x)$	-2	-7	-1	-4	0	-3	1	-4	2	-7	
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- a. Consider $f(x)$ and $g(x)$. Which function has the smaller output as x approaches infinity?

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- b. Consider $f(x)$ and $h(x)$. Which function has the greatest number of imaginary zeros?

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- c. Consider $f(x)$ and $h(x)$. Which function has a greater degree?
- d. Consider $g(x)$ and $k(x)$. Which function has the greater y -intercept?
- e. Consider $f(x)$ and $g(x)$. Which function has the lowest relative minimum?
- f. Consider $h(x)$ and $k(x)$. Which function has the greatest average rate of change over the interval $(-2, 0)$?

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2. Consider the polynomial functions $m(x) = -x^2$ and $n(x) = m(x + 4) - 3$. Which function has the greatest maximum? Explain your reasoning.
3. Consider the polynomial functions $p(x) = x^4$ and $t(x) = p(x - 1) + 7$. Which function's axis of symmetry has a greater x -value? Explain your reasoning.

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