Name: ______________________ Date: __________________

Learning Goal 3.1	Graphing and the characteristics of a graph (e.g. degree, extrema, zeros, end-behaviour).

More Questions - Solutions

Use DESMOS to graph each of the following polynomial functions and complete the table:

	$p(x) = -2x^5 + 5x^3 - x$	$h(x) = x^4 + 4x^3 - x^2 - 16x - 12$
Polynomial Type	Quintic	Quadric
End Behaviour	$\lim_{x\to\infty} p(x) = -\infty$ $\lim_{x\to-\infty} p(x) = \infty$	$\lim_{x\to\pm\infty} p(x) = \infty$
Domain	$\{x \mid x \in \mathbb{R}\}$	$\{x \mid x \in \mathbb{R}\}$
Range	$\{y \mid y \in \mathbb{R}\}$	$\{y \mid y > -24.057, y \in \mathbb{R}\}$
Number of $x -$ intercepts	5	4
$y -$ intercept	$y = 0$	$y = -12$
Maximum and/or Minimum Values	Local Minimum $y \approx -2.464$, $y \approx -0.175$ Local Maximum $y \approx 2.464$, $y \approx 0.175$	Local Minimum $y \approx -1.766$ Minimum $y \approx -24.057$ Local Maximum $y \approx 1.324$

1. The x −intercepts of the graph of a function are the **zeros of the function**. We can find the zeros the function by graphing the function and determining the x −intercepts. Approximate the zeros of the function $f(x) = x^3 - 9x^2 + 20x$. What is another way to do this?

$$\begin{aligned} f(x) &= x^3 - 9x^2 + 20x \\ &= x(x^2 - 9x + 20) \\ &= x(x-4)(x-5) \end{aligned}$$

$$x = 0, 4, 5$$