

1.1 Polynomial Power Functions Worksheet with solutions

This document was composed and formatted by Annie Bernatchez.

The course material originated from www.jensenmath.ca

1) Identify which of the following are polynomial functions:

a) $p(x) = \cos x$ — **No**

b) $h(x) = -7x$ — **Yes**

c) $f(x) = 2x^4$ — **Yes**

d) $y = 3x^5 - 2x^3 + x^2 - 1$ — **Yes**

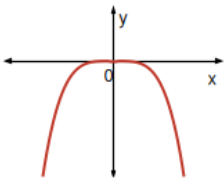
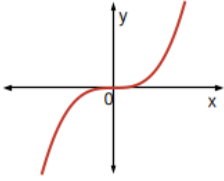
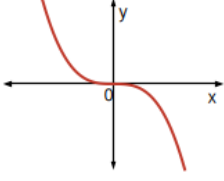
e) $k(x) = 8^x$ — **No**

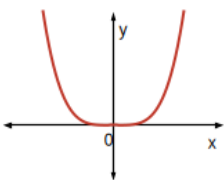
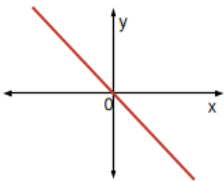
f) $y = x^{-3}$ — **No**

2) State the degree and the leading coefficient of each polynomial

Polynomial	Degree	Leading Coefficient
$y = 5x^4 - 3x^3 + 4$	4	5
$y = -x + 2$	1	-1
$y = 8x^2$	2	8
$y = -\frac{x^3}{4} + 4x - 3$	3	$-\frac{1}{4}$
$y = -5$	0	-5
$y = x^2 - 3x$	2	1

3) Complete the following table

Graph of Function	Even or Odd Degree?	Sign of Leading Coefficient	Domain and Range	Symmetry	End Behaviour
	Even	Negative	D: $(-\infty, \infty)$; R: $(-\infty, 0]$	Line	Q3 to Q4
	Odd	Positive	D: $(-\infty, \infty)$; R: $(-\infty, \infty)$	Point	Q3 to Q1
	Odd	Negative	D: $(-\infty, \infty)$; R: $(-\infty, \infty)$	Point	Q2 to Q4

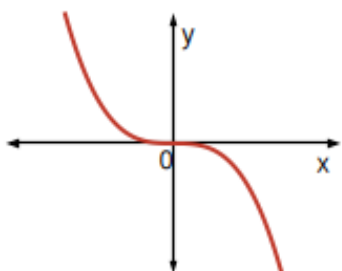
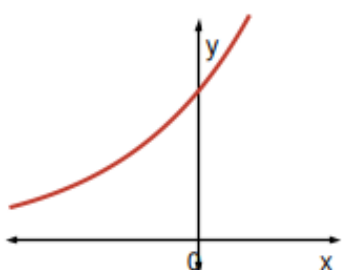
	Even	Positive	D: $(-\infty, \infty)$; R: $[0, \infty)$	Line	Q2 to Q1
	Odd	Negative	D: $(-\infty, \infty)$; R: $(-\infty, \infty)$	Point	Q2 to Q4

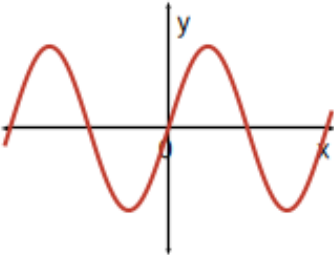
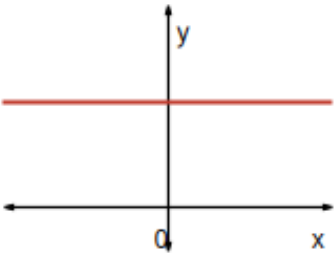
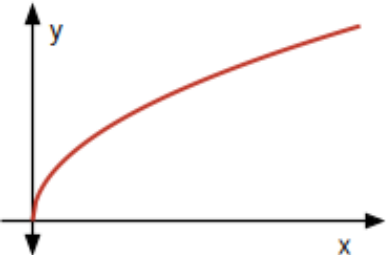
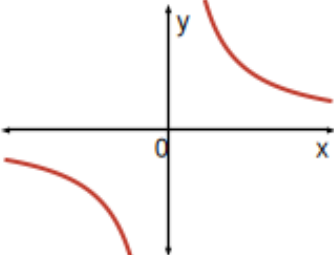
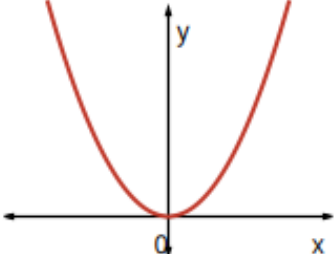
4) Match each function to its end behaviour

- $y = -x^3$, $y = \frac{3}{7}x^2$, $y = 5x$
- $y = 4x^5$, $y = -x^6$, $y = -0.1x^{11}$
- $y = 2x^4$, $y = -9x^{10}$

End Behaviour	Functions
Q3 to Q1	$y = 4x^5$, $y = 5x$
Q2 to Q4	$y = -x^3$, $y = -0.1x^{11}$
Q2 to Q1	$y = 2x^4$, $y = \frac{3}{7}x^2$
Q3 to Q4	$y = -x^6$, $y = -9x^{10}$

5) Determine whether each graph represents a polynomial power function, exponential function, a periodic function, or none of these.

a)		Power
b)		Exponential

c)		Periodic
d)		Power
e)		None (square root)
f)		None (rational)
g)		Power