# Math 418: Worksheet 5

September 27, 2020

Directions: Justify ALL your answers. Note some answers can be justified simply by showing your work.

1 Find the domain and range for $f(x) = 3(x+2)(x-1)$

2 Find the range for $g(x) = -3(x+4)^2 - 5$

3 Find the range for $g(x) = 12(x-9)^2 + 6$

4 Sketch the graph of $p(x) = 2x^2 - 3x + 5$

5 Sketch the graph of the power function $f(x) = 2x^9$. What are the domain and range of $f$?

6 Sketch the graph of the power function $g(x) = -4x^{12}$ What are the domain and range of $g$?

7 Give values for $A$ and $B$ so that $g(x) = Ax^B$ passes through the points $(1, 2)$ and $(2, 8)$.

8 Give values for $A$ and $B$ so that $g(x) = Ax^B$ passes through the points $(-3, \frac{27}{2})$ and $(2, -4)$.

9 Give an example of two polynomials with roots at $x = -4, -2, 0$ and $10$.

10 Give an example of a polynomial $p(x)$ of degree 3 such that $p(8) = 0$, $p(-1) = 0$, $p(5) = 0$ and $p(3) = 10$.

11 How many polynomials $f(x)$ are there such that $f(x)$ has degree 4 and $f(0) = 0$, $f(5) = 0$ and $f(-10) = 40$? Find them all.