# Lesson 3 – Final Practice Activity

Page 1:

Complete the following table based on the given function. When finished, you can check your work using the suggested answers on the following page.

| | $y=-0.2(x-2)(x+3)(x-1)$ | $y=\frac{2}{5}(x+2)^2(x-1)$ | $y=-3(x-5)(x+3)^3$ | $y=-\frac{4}{3}(x+2)^2(x-3)^2$ |
|---|---|---|---|---|
| Degree of Function | | | | |
| Leading Coefficient | | | | |
| End Behaviours | | | | |
| $x$-intercepts and Their Order | | | | |
| Behaviour of Graph at $x$-intercepts | | | | |

**Page 2:**

**Suggested Answers**

The suggested answers to the preceding questions are as follows, be sure to check your work to ensure understanding.

| | $y=-0.2(x-2)(x+3)(x-1)$ | $y=\frac{2}{5}(x+2)^2(x-1)$ | $y=-3(x-5)(x+3)^3$ | $y=-\frac{4}{3}(x+2)^2(x-3)^2$ |
|---|---|---|---|---|
| Degree of Function | 3<br><br>$(x)(x)(x)=x\,3$ | 3<br><br>$(x)^2(x)=(x)(x)(x)\;=x^3$ | 4<br><br>$(x)(x)^3=(x)(x)(x)(x)=x^4$ | 4<br><br>$(x)^2(x)^2\;=(x)(x)(x)(x)=x^4$ |
| Leading Coefficient | $-0.2$ | $2\_5$ | $-3$ | x$-$ 4 _ 3 |
| End Behaviours | Start high<br><br>End low | Start low<br><br>End high | Start low<br><br>End low | Start low<br><br>End low |
| $x$-intercepts and Their Order | Single root at $x=2$<br><br>Single root at $x=-3$<br><br>Single root at $x=1$ | Double root at $x=-2$<br><br>Single root at $x=1$ | Single root at $x=5$<br><br>Triple root at $x=-3$ | Double root at $x=-2$<br><br>Double root at $x=3$ |

| Behaviour of Graph at $x$-intercepts | At the single root, $x = 2$, the graph will cross the $x$-axis | At the double root, $x = -2$, the graph will touch the $x$-axis, but will not cross it. | At the single root, $x = 5$, the graph will cross the $x$-axis | At the double root, $x = -2$, the graph will touch the $x$-axis, but will not cross it. |
|---|---|---|---|---|
| | At the single root, $x = -3$, the graph will cross the $x$-axis | At the single root, $x = 1$, the graph will cross the $x$-axis | At the triple root, $x = -3$, the graph will cross the $x$-axis | At the double root, $x = 3$, the graph will touch the $x$-axis, but will not cross it. |
| | At the single root, $x = 1$, the graph will cross the $x$-axis | | | |