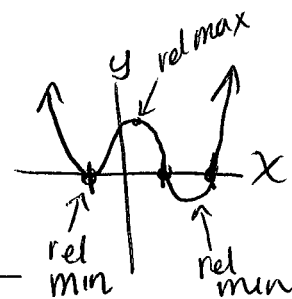


Unit 3 Module 5.4 Part 2

State the x intercepts of the function. Determine the number of turning points, relative max and min.

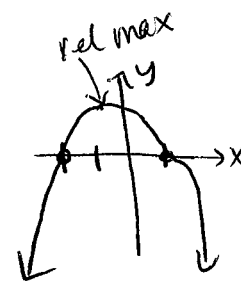
5. $f(x) = x(x+1)(x+3)$
 $y = (x^2+x)(x+3)$
 $y = x^3 + 3x^2 + x^2 + 3x$
 $y = x^3 + 4x^2 + 3x$
 X intercepts: (0,0) (-1,0) (-3,0)
 Number of Turning Points: 2
 Number of Relative Maximum: 1
 Number of Relative Minimum: 1
 Standard form: $y = x^3 + 4x^2 + 3x$

6. $f(x) = (x+1)^2(x-1)(x-2)$
 Degree 4
 Lead Coef: Pos
 X intercepts: (-1,0) (1,0) (2,0)
 Number of Turning Points: 3
 Number of Relative Maximum: 1
 Number of Relative Minimum: 2



7. $f(x) = -x(x-2)^2$
 $y = -x(x-2)(x-2) = (-x^2+2x)(x-2)$
 $y = -x^3 + 2x^2 + 2x^2 - 4x$
 $y = -x^3 + 4x^2 - 4x$
 X intercepts: (0,0) (2,0)
 Number of Turning Points: 2
 Number of Relative Maximum: 1
 Number of Relative Minimum: 1
 Standard form: $y = -x^3 + 4x^2 - 4x$

8. $f(x) = -(x-1)(x+2)^3$
 Degree 4
 Lead Coef: Neg
 X intercepts: (1,0) (-2,0)
 Number of Turning Points: 1
 Number of Relative Maximum: 1
 Number of Relative Minimum: 0



Sketch the graph the polynomial function.

9. $f(x) = x^2(x-2)$
 Degree: 3
 Lead Coef is positive
 X int: (0,0) (2,0)
 Standard form: $y = x^3 - 2x^2$

10. $f(x) = -(x+1)(x-2)(x-3)$
 $y = -(x+1)(x^2-2x-3x+6)$
 $y = -(x+1)(x^2-5x+6)$
 $y = -(x^3-5x^2+6x+x^2-5x+6)$
 $y = -(x^3-4x^2-x+6)$
 $y = -x^3 + 4x^2 + x - 6$
 Degree: 3
 Lead Coef. Negative

20. **Make a Prediction** Knowing the characteristics of the graphs of cubic and quartic functions in intercept form, sketch the graph of the quintic function $f(x) = x^2(x+2)(x-2)^2$.

X intercept
(0,0) tangent
(-2,0) cross
(2,0) tangent
 Degree: 5
 end behavior is opposite
 Leading coef. is positive