Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period \_\_\_\_\_\_\_\_ Date \_\_\_\_\_\_\_\_\_\_\_\_

**Advanced Functions and Modeling Unit 10 Homework**

**Find the critical points for each function. Then determine whether each point is a minimum, maximum, or point of inflection. Round answers to the nearest hundredth.**

1. $f\left(x\right)=x^{2}-8x+10$ 2$ j\left(k\right)=k^{4}-8k^{2}+16$ 3. $D\left(t\right)=-t^{2}-2t+8$

4. $m\left(k\right)=k^{5}-28$ 5. $s\left(w\right)=w^{3}-w^{2}+3$ 6. $f\left(x\right)=2x^{3}-x^{2}+1$

**Find the x-intercepts, y-intercept, and all points of inflection. Graph. Then describe the intervals over which the graph is increasing and decreasing.**

9. $f\left(x\right)=x^{3}-2x+8$ 10. $f\left(x\right)=4x^{2}+16x+15$

Increasing \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Increasing \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Decreasing \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Descreasing \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

11. $f\left(x\right)=-x^{4}-x^{3}+3x^{2}-1$ 12. $f\left(x\right)=\left(x+2\right)\left(x-3\right)(x-1)$

Increasing \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Increasing \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Decreasing \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Descreasing \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_­\_

**Graph the following without a calculator. Use your knowledge of end behavior and shape of graph at the zeros.**

13. $f\left(x\right)=x^{2}\left(x-4\right)(x+3)^{3}$ 14. $f\left(x\right)=-\left(x-2\right)\left(x+1\right)(x-1)^{2}$

