Graphing Worksheet 3

Let \( f(x) = x^4 - 2x^2 + 8 \).

1. Find the domain of \( f(x) \).

2. Find all vertical and horizontal asymptotes of \( f(x) \)

3. Find the \( x \) and \( y \) intercepts of \( f(x) \), if possible

4. Find \( f' \) and \( f'' \)

5. Determine the intervals on which \( f \) is increasing and decreasing

6. Determine if \( f \) has any local or absolute extremes

7. Find the intervals of concavity of \( f \)

8. Determine if \( f \) has any inflection points

9. Plot asymptotes and key points on the graph of \( f \), including but not limited to intercepts, local max/mins, and inflection points

10. Draw the curve using your knowledge of its behavior with regards to increasing/decreasing behavior and concavity.
Graphing Worksheet 3

Let $f(x) = x\sqrt{8 - x^2}$.

1. Find the domain of $f(x)$.

2. Find all vertical and horizontal asymptotes of $f(x)$.

3. Find the $x$ and $y$ intercepts of $f(x)$, if possible.

4. Find $f'$ and $f''$.

5. Determine the intervals on which $f$ is increasing and decreasing.

6. Determine if $f$ has any local or absolute extremes.

7. Find the intervals of concavity of $f$.

8. Determine if $f$ has any inflection points.

9. Plot asymptotes and key points on the graph of $f$, including but not limited to intercepts, local max/mins, and inflection points.

10. Draw the curve using your knowledge of its behavior with regards to increasing/decreasing behavior and concavity.