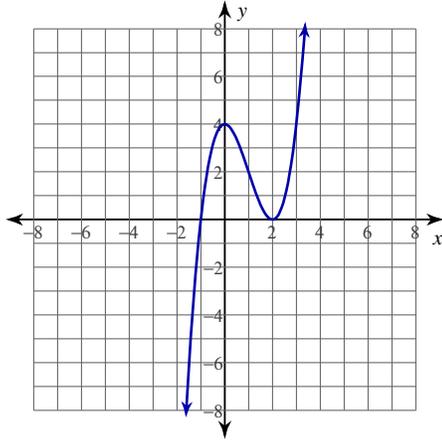Kuta Software - Infinite Calculus

Name_____

Intervals of Concavity

Date_____ Period_____

For each problem, find the x-coordinates of all points of inflection, find all discontinuities, and find the open intervals where the function is concave up and concave down.

1) $y = x^3 - 3x^2 + 4$

2) $y = x^3 - 2x^2 - 2$
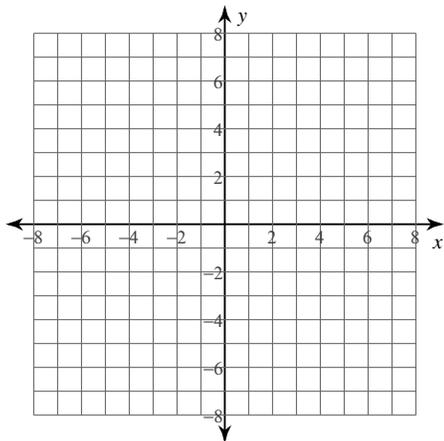
3) $y = x^4 + x^3 - 3x^2 + 1$

4) $y = \dfrac{1}{x - 3}$

5) $y = -\dfrac{x^3}{x^2 - 4}$

6) $y = (5x + 30)^{\frac{2}{3}}$

7) $y = -\dfrac{3}{16}(x-1)^{\frac{4}{3}} - \dfrac{3}{2}(x-1)^{\frac{1}{3}} + 2$

Critical thinking question:

8) Sketch a continous curve $y = f(x)$ where $f(1) = 0$, $f'(0) = 0$, $f'(2) = 0$, $f''(x) < 0$ for $x < 1$, and $f''(x) > 0$ for $x > 1$.

Name_____

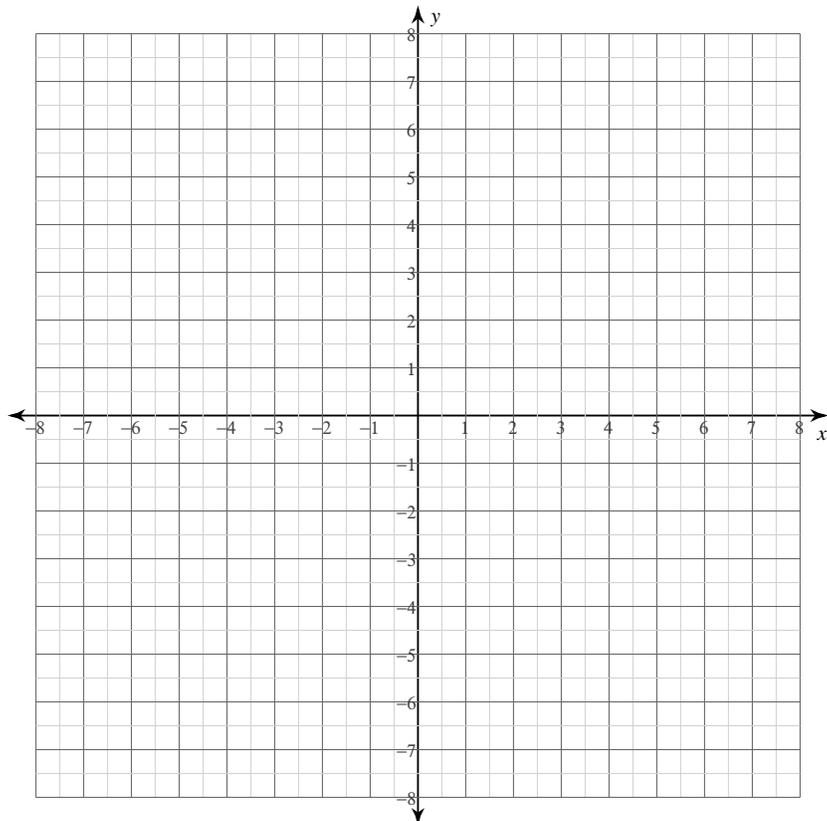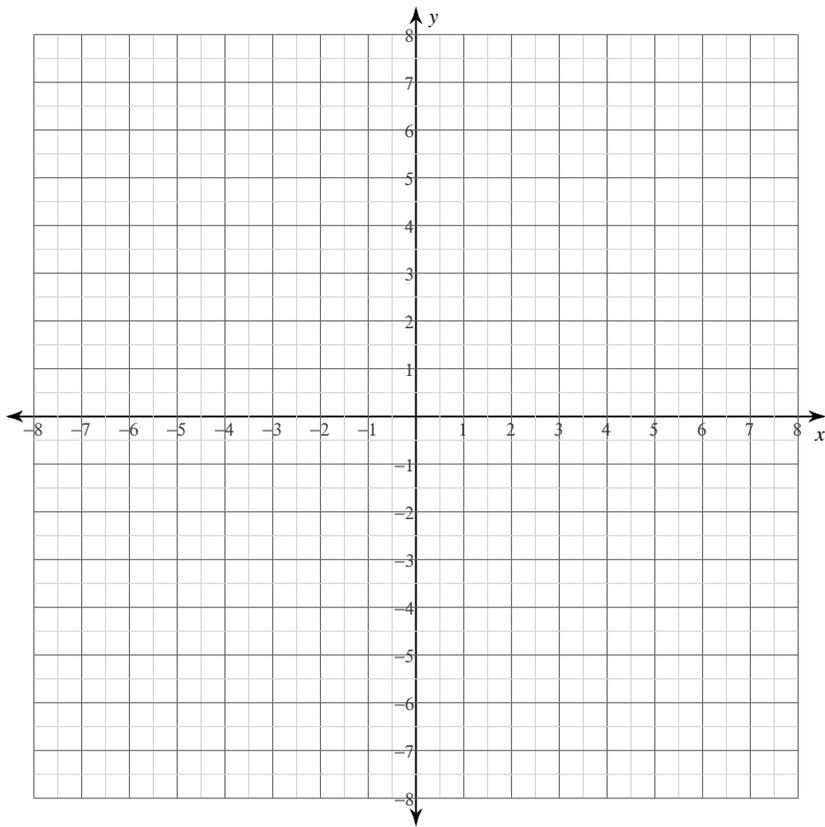# Curve Sketching

Date_____ Period____

For each problem, find the: x and y intercepts, x-coordinates of the critical points, open intervals where the function is increasing and decreasing, x-coordinates of the inflection points, open intervals where the function is concave up and concave down, and relative minima and maxima. Using this information, sketch the graph of the function.

1) $y = -\dfrac{x^3}{3} + x^2$

2) $y = -\dfrac{x^4}{4} + x^2 - 1$

3) $y = \dfrac{1}{5}(x-4)^{\frac{5}{3}} + 2(x-4)^{\frac{2}{3}}$

For each problem, find the: x and y intercepts, asymptotes, x-coordinates of the critical points, open intervals where the function is increasing and decreasing, x-coordinates of the inflection points, open intervals where the function is concave up and concave down, and relative minima and maxima. Using this information, sketch the graph of the function.
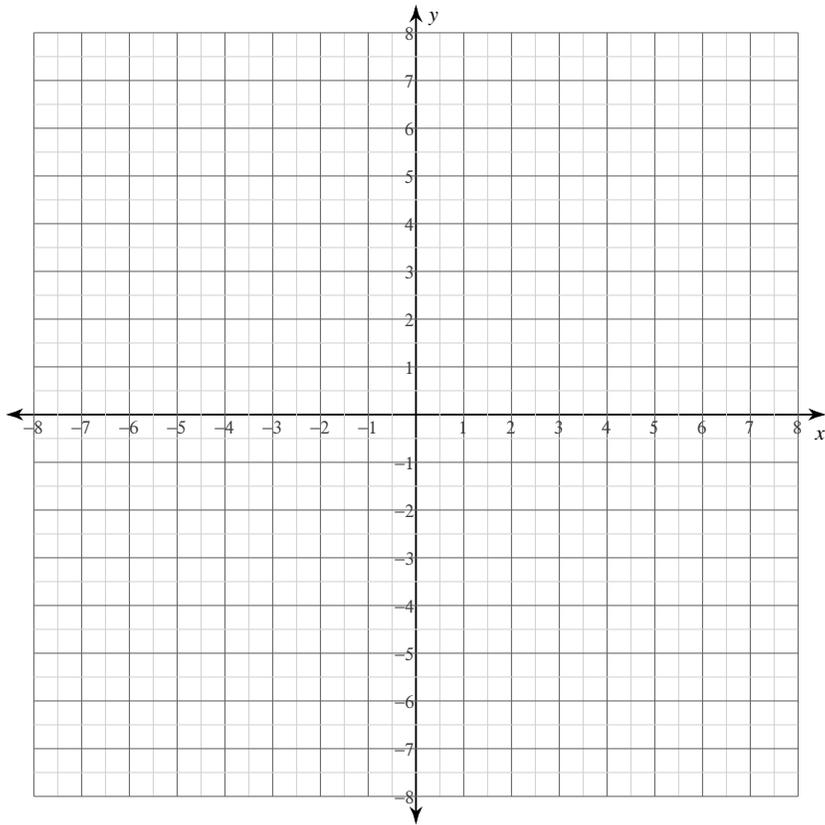
4) $y = \dfrac{7x^2 - 7}{x^3}$