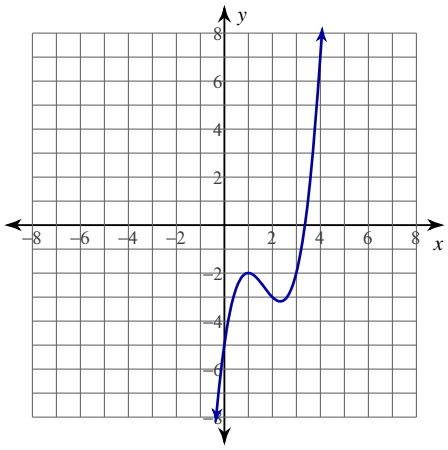
 Name_____

# Assignment

Date_____ Period____

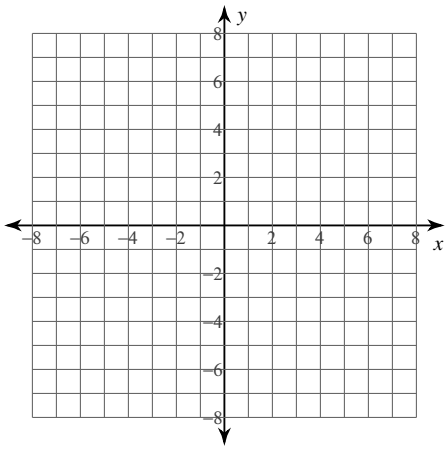
**For each problem, find all points of relative minima and maxima.**

1) $y = x^3 - 5x^2 + 7x - 5$




**For each problem, find all points of relative minima and maxima. You may use the provided graph to sketch the function.**

2) $y = x^3 - 6x^2 + 9x + 1$



**For each problem, find all points of relative minima and maxima.**

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

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

5) $y = x^4 - x^2$

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

7) $y = (2x - 8)^{\frac{2}{3}}$

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

**Critical thinking questions:**

9) Give an example function $f(x)$ where $f''(0) = 0$ and there is no relative minimum or maximum at $x = 0$.

10) Give an example function $f(x)$ where $f''(0) = 0$ and there is a relative maximum at $x = 0$.

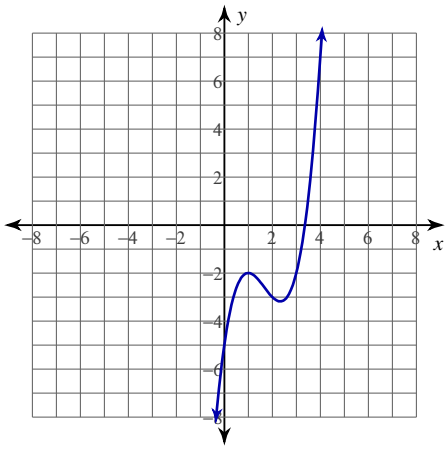
Kuta Software - Infinite Calculus Name_____

# Assignment

Date_____ Period____

**For each problem, find all points of relative minima and maxima.**

1) $y = x^3 - 5x^2 + 7x - 5$

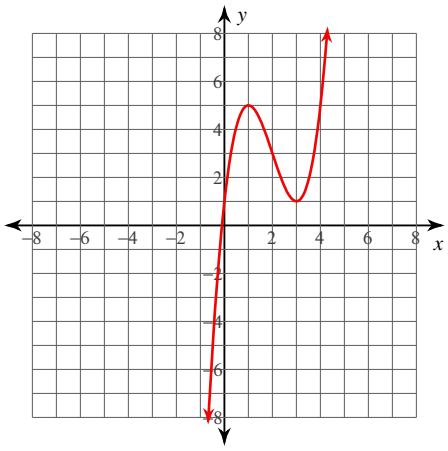



Relative minimum: $\left(\frac{7}{3}, -\frac{86}{27}\right)$

Relative maximum: $(1, -2)$

**For each problem, find all points of relative minima and maxima. You may use the provided graph to sketch the function.**

2) $y = x^3 - 6x^2 + 9x + 1$




Relative minimum: $(3, 1)$

Relative maximum: $(1, 5)$

**For each problem, find all points of relative minima and maxima.**

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

Relative minimum: $(-2, -5)$
Relative maximum: $(0, -1)$

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

Relative minima: $(-1, 2), (1, 2)$
Relative maximum: $(0, 3)$

5) $y = x^4 - x^2$

Relative minima: $\left(-\frac{\sqrt{2}}{2}, -\frac{1}{4}\right), \left(\frac{\sqrt{2}}{2}, -\frac{1}{4}\right)$
Relative maximum: $(0, 0)$

6) $y = -\frac{2}{x^2 - 4}$

Relative minimum: $\left(0, \frac{1}{2}\right)$
No relative maxima.

7) $y = (2x - 8)^{\frac{2}{3}}$

Relative minimum: $(4, 0)$
No relative maxima.

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

Relative minimum: $\left(0, -\frac{12\sqrt[3]{2}}{5}\right)$
Relative maximum: $(4, 0)$

**Critical thinking questions:**

9) Give an example function $f(x)$ where $f''(0) = 0$ and there is no relative minimum or maximum at $x = 0$.

Many answers. Ex: $f(x) = 0, x, x^3$, etc

10) Give an example function $f(x)$ where $f''(0) = 0$ and there is a relative maximum at $x = 0$.

Many answers. Ex: $f(x) = -x^4$