Check up 7

Date_____

For each problem, find all points of relative minima and maxima using the first derivative test.

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

For each problem, find all points of relative minima and maxima using the second derivative test.

2) $f(x) = -\frac{x^2}{3x+6}$

For each problem, find all points of absolute minima and maxima on the given interval.

3) $y = \frac{1}{6}(x+1)^{\frac{7}{3}} - \frac{14}{3}(x+1)^{\frac{1}{3}} - 2; \quad [-3, 0]$

For each problem, find the open intervals where the function is concave up and concave down.

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

Calculus Name_____ ID: 1

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For each problem, find all points of relative minima and maxima using the first derivative test.

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

Relative minimum: $\left(-1, \frac{8-9\sqrt[3]{2}}{8}\right)$

No relative maxima.

For each problem, find all points of relative minima and maxima using the second derivative test.

2) $f(x) = -\frac{x^2}{3x+6}$

Relative minimum: $\left(-4, \frac{8}{3}\right)$

Relative maximum: $(0, 0)$

For each problem, find all points of absolute minima and maxima on the given interval.

3) $y = \frac{1}{6}(x+1)^{\frac{7}{3}} - \frac{14}{3}(x+1)^{\frac{1}{3}} - 2; \quad [-3, 0]$

Absolute minimum: $\left(0, -\frac{13}{2}\right)$

Absolute maximum: $(-3, 4\sqrt[3]{2} - 2)$

For each problem, find the open intervals where the function is concave up and concave down.

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

Concave up: $(-\infty, -3), (-3, 3)$ Concave down: $(3, \infty)$