

Critical Pts + Extrema WS

#1-8 Find and label all extrema on the indicated interval.

1) $f(x) = 2x^4 + 27x^2$ on $[-3, 1]$

2) $f(x) = \sqrt{3} \sin x - \cos x - 2\pi$ on $[-\pi, \pi]$

3) $f(x) = x^2 - 4x + 4$ on $(-\infty, +\infty)$

4) $f(x) = \frac{2x^5}{5} - 32x$ on $(-\infty, +\infty)$

5) $f(x) = \frac{e^{2x-1}}{2} - x$ on $(-\infty, +\infty)$

6) $f(x) = \sqrt[3]{x^2 - 25}$ on $(-\infty, +\infty)$

7) $f(x) = \frac{3x}{x+2}$ on $(-\infty, +\infty)$

8) $f(x) = \frac{2x^2}{e^x}$ on $(-\infty, +\infty)$

#9-10 a) Find all critical point(s) and inflection pt(s) of $f(x)$.
 b) Determine the intervals where $f(x)$ is increasing, decreasing, concave up and concave down. c) Find all local extrema.
 d) Find and label all discontinuities for $f(x)$. e) Find the zeros of $f(x)$.

9) $f(x) = 9x^3 - 6x^2 + 12x - 8$

10) $f(x) = \frac{x^2 - 4}{x^2 - 25}$