

AUC apCalculus BC

Classwork Assignment GP3.CW5

In Exercises 17–42, (a) find the critical numbers of f (if any), (b) find the open interval(s) on which the function is increasing or decreasing, (c) apply the First Derivative Test to identify all relative extrema, and (d) use a graphing utility to confirm your results.

18. $f(x) = x^2 + 6x + 10$

20. $f(x) = -(x^2 + 8x + 12)$

22. $f(x) = x^3 - 6x^2 + 15$

24. $f(x) = (x + 2)^2(x - 1)$

26. $f(x) = x^4 - 32x + 4$

28. $f(x) = x^{2/3} - 4$

30. $f(x) = (x - 3)^{1/3}$

32. $f(x) = |x + 3| - 1$

34. $f(x) = \frac{x}{x + 3}$

1. Study and learn the statements & proofs of Rolle's Theorem & The Mean Value Theorem and upload them on Archie. You will write a 15 min quiz on it tomorrow.

2. Find the absolute extrema for the following f 's in the given intervals:

17. $f(x) = 3 - x$, $[-1, 2]$

19. $g(x) = x^2 - 2x$, $[0, 4]$

20. $h(x) = -x^2 + 3x - 5$, $[-2, 1]$

21. $f(x) = x^3 - \frac{3}{2}x^2$, $[-1, 2]$

23. $y = 3x^{2/3} - 2x$, $[-1, 1]$

25. $g(t) = \frac{t^2}{t^2 + 3}$, $[-1, 1]$

27. $h(s) = \frac{1}{s - 2}$, $[0, 1]$

29. $y = 3 - |t - 3|$, $[-1, 5]$

30. $g(x) = \frac{1}{1 + |x + 1|}$, $[-3, 3]$