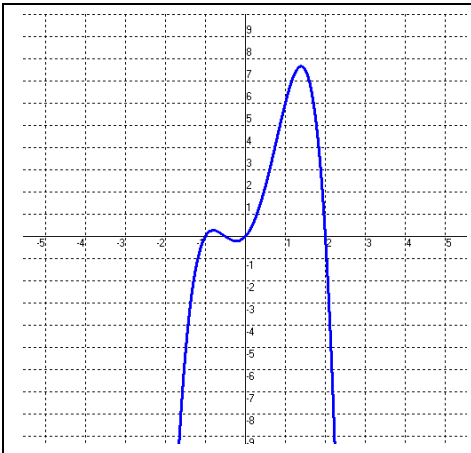


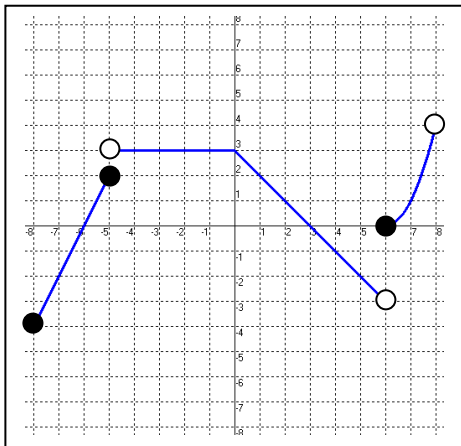
This is the graph of  $f''(x)$ .

1. Mark with an X the point(s) of inflection.
2. On what interval(s) is  $f(x)$  concave up?
3. On what interval(s) is  $f''(x) < 0$ ?
4. On what intervals is  $f''(x)$  increasing?
5. At what values of  $x$  does concavity change from concave up to concave down?



This is the graph of  $g'(x)$ .

6. Where are the relative maxima of  $g$ ?
7. Where are the points of inflection of  $g$ ?
8. On what intervals is  $g$  concave up?
9. For what values of  $x$  is  $g(x)$  increasing?
10. For what values of  $x$  is  $g$  concave down?



This is the graph of  $h''(x)$ .

11. On what interval(s) is  $h$  concave down?
12. At what values is  $h''(x)$  undefined?
13. Evaluate  $h'(1) + h''(1)$ .
14. For what value(s) of  $x$  is  $h''(x) > 0$ ?
15. For what values of  $x$  is  $h$  concave up?

Given  $f''(x) = (x-5)(x+1)(x-3)$

16. Where is  $f$  concave up?

17. Where are the point(s) of inflection of  $f$ ?

18. For what values of  $x$  is  $f''(x) = 0$ ?

19. Where is  $f$  concave down?

Given  $s(t) = 2\cos(\pi t)$  on the interval  $[0, 4]$ :

24. For what value(s) of  $t$  is the particle at rest?

25. For what values of  $t$  is  $v(t) < 0$ ?

26. For what values of  $t$  is  $a(t) > 0$ ?

27. For what values of  $t$  is  $a(t) = 0$ ?

Given  $f''(x) = |\ln x| - 2$

37. Find the equation(s) of asymptote(s) of  $f''(x)$ .

38. Where is/are the point(s) of inflection on  $f$ ?

39. Evaluate  $f''(1)$

40. Find the exact value of  $f''(e)$ .

Given the function  $s(t) = 0.5(t-4)(t-5)$  on  $[0, \infty)$

20. For what value(s) of  $t$  is the particle at rest?

21. For what values of  $t$  is  $v(t)$  positive?

22. Is  $a(t)$  positive, negative or zero at  $t = 6$ ?

23. Is  $v(t)$  positive, negative, or zero at  $t = 2$ ?

Given  $q(x) = (x-1)(x+1)(x)(x-2)$  on  $[-3, 3]$

28. Find the slope of the tangent line to  $q$  at  $x = 1.5$

29. Where is  $q''(x) < 0$ ?

30. Where is the minimum of  $q$ ?

31. Where are the points of inflection of  $q$ ?

Given  $a(t) = \sec \frac{\pi t}{6}$  on  $[-10, 10]$

41. For what values of  $t$  is  $a(t) < 0$ ?

42. For what values of  $t$  is  $a(t)$  undefined?

43. For what values of  $t$  is  $s(t)$  concave up?

44. Evaluate the acceleration of  $s(t)$  at  $t = 2$ .

$$\text{Given } s(t) = \begin{cases} t+6 & -8 \leq t \leq -2 \\ t^2 & -2 < t < 2 \\ 2t & 2 \leq t \leq 8 \end{cases}$$

45. Find the velocity of the particle at  $t = 4$ ?

48. Evaluate  $a(-5)$ .

46. For what value(s) of  $t$  is  $s(t)$  decreasing?

49. For what values of  $t$  is  $s(t)$  concave up?

47. For what value(s) of  $t$  is  $a(t) > 0$ ?

50. Find  $v(3)$ .