

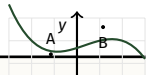
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1. For this curve, state the gradient at each turning point. Is it a maximum or minimum?

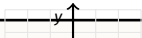


2. State the gradient at A and B. Which is a maximum, which is a minimum?



3. Identify the turning points and state their gradient:

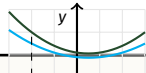
4. Compare the gradient at $x = -2$ on both curves. Which is steeper?



5. At $x = 2$, which curve has the larger gradient?



6. Which curve has the steeper positive gradient at $x = -2$?



7. State the gradient at each turning point and classify as max or min:

8. Find the stationary points and their types:

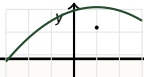


9. At turning points A and B, what is the gradient? Which is max/min?

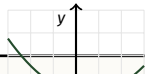
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10. Describe how the gradient changes as x increases from -3 to 3 :



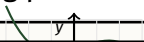
11. Describe the gradient behaviour for this quadratic:



12. Trace the sign of the gradient from left to right:



13. Describe the gradient sign on each interval separated by turning points:

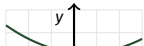


14. Where is the gradient most positive? Most negative?



15. Complete: "As $x \rightarrow -3$, the gradient is ____; as x increases, the gradient ____ until at the turning point it is ____"

16. Sketch a gradient sign diagram for this curve:



17. For the cubic shown, describe how $f'(x)$ changes sign across the domain:

18. Explain why the gradient at $x = -1$ is different to $x = 1$ for this curve:

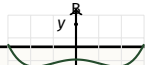
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19. Identify all stationary points and classify each as max, min, or inflection:



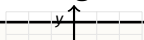
20. This quartic has three stationary points. Classify each:



21. The cubic has a point of inflection at A. What is the gradient there?



22. Where are the stationary points? A is a point of inflection — what is the gradient?



23. Classify points A, B, and C. Is the gradient zero at all three?



24. This curve has a maximum at A and an inflection point at B. State the gradient values:

25. Find the x-coordinates where the gradient is zero. Classify each:

26. This quartic has a minimum at A, maximum at B, minimum at C. What is

27. Analyse this curve: find all stationary points, state gradient at each, and classify: