

5 Concavity and the shape of a curve — Part 2 — Answers

Answers

Work through these after you have tried the questions yourself.

2.1 $f''(x) > 0$ means concave up (smile); $f''(x) < 0$ means concave down (frown).

2.2 the point where a curve changes its concavity (from bending up to bending down, or the reverse).

2.3 $f'(x) = 2x + 6 = 0$ at $x = -3$; $f''(x) = 2 > 0$, so it is a minimum.

2.4 if $f' = 0$ and $f'' > 0$ at a point, it is a minimum.

2.5 concavity describes how the curve **bends**, not its slope – a smile-shaped curve can still be falling before it turns and rises.