Derivative Application Exercises

A. When are the following functions increasing/decreasing? When are they concave up/down?

1. $f(x) = 2x^2 + 3x$

2. $f(x) = x^3 + 17x^2 + 2$

Answers (in no particular order)

- increasing: $x > \frac{-3}{4}$, decreasing: $x < \frac{-3}{4}$, concave up: all of $\mathbb{R}$, concave down: nowhere

- increasing: $x > 0$ and $x < \frac{-3}{4}$, decreasing: $\frac{-3}{4} < x < 0$, concave up: $x > \frac{-17}{3}$, concave down: $x < \frac{-17}{3}$