

Quiz #12

Name: Key*You must show your work to get full credit.*

1. A function is given by the following table

| x | 1.0 | 1.2 | 1.4 | 1.6 |
|--------|-----|-----|-----|-----|
| $f(x)$ | 3.1 | 2.9 | 2.5 | 1.9 |

Make a table for the derivative $f'(x)$

| x | 1.1 | 1.3 | 1.5 |
|---------|-----|-----|-----|
| $f'(x)$ | -1 | -2 | -3 |

$$f'(1.1) \approx \frac{2.9 - 3.1}{1.2 - 1.0} = \frac{-0.2}{0.2} = -1$$

$$f'(1.3) \approx \frac{2.5 - 2.9}{1.4 - 1.2} = \frac{-0.4}{0.2} = -2$$

$$f'(1.5) \approx \frac{1.9 - 2.5}{1.6 - 1.4} = \frac{-0.6}{0.2} = -3$$

2. Draw graphs of functions that have the following properties

(a) $f' > 0$ and $f'' > 0$

increasing concave up

(b) $f' > 0$ and $f'' < 0$

increasing concave down

(c) $f' < 0$ and $f'' > 0$

decreasing concave up

(d) $f' < 0$ and $f'' < 0$

decreasing concave down

