

## Solutions

---

Each answer shows the steps, then the **result**.

### 2.1

- $y_{\text{new}} = y_{\text{old}} + \frac{dy}{dx} \cdot \Delta x$

### 2.2

- slope at  $(1, 3) = 2$ ;  $y \approx 3 + 2(0.5) = 4$

### 2.3

- slope at  $(1.5, 4) = 3$ ;  $y \approx 4 + 3(0.5) = 5.5$

### 3.1 B

- it steps along tangent lines given by the slope field

### 3.2

- Step 1 at  $(0, 2)$ : slope  $0 - 2 = -2$ ;  $y \approx 2 + (-2)(0.5) = 1$  at  $x = 0.5$ . Step 2 at  $(0.5, 1)$ : slope  $0.5 - 1 = -0.5$ ;  $y \approx 1 + (-0.5)(0.5) = 0.75$  at  $x = 1$

### 3.3

- Under-estimate — for a concave-up curve each tangent-line step lies below the true curve