Solutions

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

2.1

- rejecting H_0 when it is in fact true

2.2

- 1.645

3.1 B

- Reject H_0 when the p-value is below the significance level 0.05

3.2

(a)

- $H_0 : \mu = 500$, $H_1 : \mu > 500$; one-tailed

(b)

- $z = \dfrac{502 - 500}{6/\sqrt{36}} = \dfrac{2}{1} = 2$; critical value 1.645; since $2 > 1.645$, reject H_0: there is evidence the mean has increased

3.3

(a)

- $P(X \geqslant 15) = 0.0207$ (from tables); this is the smallest "tail" region with probability $\leqslant 0.05$, so it is the 5% critical region

(b)

- concluding the coin is biased towards heads ($p > 0.5$) when in fact it is fair