(Q6)
(a) True.

Proof. We observe that by properties of the integral,

$$\int_{-a}^{a} f(x)dx = \int_{-a}^{0} f(x)dx + \int_{0}^{a} f(x)dx$$
$$-\int_{-a}^{0} f(x)dx = \int_{0}^{-a} f(x)dx$$

Since f is even, $f(a) = f(-a)$:

$$\int_{0}^{a} f(x)dx = \int_{0}^{-a} f(x)dx$$

The result follows. ■

(b) True.

Proof. Since $f(x)$ is continuous on $\mathbb{R} \setminus \{0\}$ and may or may not have a discontinuity at 0, the proof follows by proof of Q3. ■

(c) False.
(d) True.