1. False (F).

$$f(-3) = f(3) = 9$$

2. False (F).

$$f(x) = (0,0)$$

3. True (T).
4. True (T).
5. False (F).
$x * x$ can be negative.
6. True (T).
7. False (F).
$x * x$ can be zero even if $x \neq (0,0,0)$.
8. False (F).
9. True (T).
$< x, y >= 2x_1y_1 + x_2y_2 + x_3y_3 + 5x_4y_4$
10. False (F).