Student Number: ████████   Name: Bryan Hoang

7. (10 points)

(a) **Answer:**

Table 1: Computing $19 \cdot (24, 14)$ on $Y^2 = X^3 + 23X + 13 \pmod{83}$.

Step i	n	$Q = 2^i P$	R
0	19	(24, 14)	$\mathcal{O}$
1	9	(30, 8)	(24, 14)
2	4	(24, 69)	(30, 75)
3	2	(30, 75)	(30, 75)
4	1	(24, 14)	(30, 75)
5	0	(30, 8)	(24, 69)

Therefore, $\boxed{19 \cdot (24, 14) = (24, 69)}$.