Date:

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Roll# 19P-0067
Section: 5B

$a = 5$
$b = 50$

$f(a) = 5^2 - 81$
$= 25 - 81$
$= -56$

$f(b) = 50^2 - 81$
$= -2419$

$P_1 = \frac{a_1 + b_1}{2} = \frac{55}{2} = 27.5$

$F(P_1) = (27.5)^2 - 81$
$= 675.25 > 0$

$a_2 = 5$
$b_2 = 27.5$

$P_2 = \frac{a_2 + b_2}{2} = \frac{5 + 27.5}{2}$
$= 16.25$

$F(P_2) = (16.25)^2 - 81$
$= 183.0625 > 0$

$a_3 = 5$
$b_3 = 16.25$

$P_3 = \frac{a_3 + b_3}{2}$

$$\frac{5+16.25}{2}$$

$P_3 = 10.625$

$F(P_3) = (10.625)^2 - 81$

$= 31.890 > 0$

$a_4 = 5$

$b_4 = P_3 = 10.625$

$$P_4 = \frac{a_4 + b_4}{2}$$

$$= \frac{5 + 10.625}{2}$$

$P_4 = 7.8125$

$a_5 = P_4 = 7.8125$

$b_5 = 10.625$

$$P_5 = \frac{a_5 + b_5}{2} = \frac{7.8125 + 10.625}{2}$$

$P_5 = 9.21877$

$F(P_5) = 9.21877$

$$P_6 = \frac{a_6 + b_6}{2}$$

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$$\frac{7.8125 + 9.21875}{2}$$

$$= 8.5156$$

$$F(P_6) = 8.5156$$

$$a_7 = P_6 = 8.5156$$
$$b_7 = 9.21875$$

$$P_7 = \frac{a_7 + b_7}{2} = \frac{8.5156 + 9.21875}{2}$$

$$P_7 = 8.8671$$

$$F(P_7) = (8.867)^2 - 81$$
$$= -2.3774$$

$$a_8 = P_7 = 8.867$$
$$b_8 = 9.218$$

$$P_8 = \frac{8.867 + 9.218}{2}$$

$$F(P_1) = (9.042)^2 - 81$$
$$= 0.75870$$

$$P_9 = \frac{8.867 + 9.042}{2}$$

$$= 8.954$$

$$F(P_9) = (8.954)^2 - 81$$

$$= -0.8246$$

$$q_{10} = P_9 = 8.954$$

$$b_{10} = 9.042$$

$$P_{10} = \frac{8.954 + 9.042}{2} = 8.998$$

$$F(P_{10}) = (8.998)^2 - 81$$

$$= 0.03620$$

$$q_{11} = P_{10} = 8.998$$

$$b_{11} = 9.042$$

$$P_{11} = \frac{8.998 + 9.042}{2}$$

$$P_{11} = 9.02$$

$$F(P_{11}) = (9.02)^2 - 81$$

$$= 0.36020$$

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$a_{12} = 8.998$

$b_{12} = P_{12} = 9.020$

$P_{12} = \frac{8.998 + 9.020}{2}$

$P_{12} = (9.0010)^2 - 81$

$= 0.1620$

$a_{13} = 8.998$

$b_{13} = P_{12} = 9.009$

$P_{13} = \frac{8.998 + 9.0090}{2}$

$= 9.002$

$F(P_{13}) = (9.003)^2 - 81$

$= 0.05478$

$a_{14} = 8.998$

$b_{14} = P_{13} = 9.003$

$P_{14} = \frac{8.998 + 9.002}{2}$

$= 9.000$

$F(P_{14}) = (9.000)^2 - 81$

$= 0$

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n	a_n	b_n	P_n
1	5	50	27.500
2	5	27.5	16.250
3	5	16.25	10.625
4	5	10.625	7.8125
5	7.812	10.625	9.218
6	7.812	9.218	8.516
7	8.516	9.218	8.866
8	8.866	9.218	9.042
9	8.866	9.218	8.954
10	8.955	9.043	8.998
11	8.998	9.043	9.020
12	8.998	9.020	9.009
13	8.998	9.009	9.002
14	8.998	9.002	9.000