

2008 AP Calculus AB

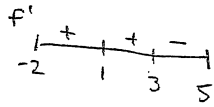
Section I Answer Key and Percent Answering Correctly Calculus AB

Item No.	Correct Answer	Percent Correct by Grade					Total Percent Correct
		5	4	3	2	1	
76	B	98	93	83	65	30	73
77	C	89	73	56	41	24	57
78	B	97	91	80	61	28	71
79	B	81	66	54	44	28	55
80	E	70	52	38	26	14	40
81	E	90	71	55	42	21	56
82	B	96	88	77	61	27	69
83	B	90	76	63	48	27	61
84	C	91	80	64	41	14	58
85	B	76	53	38	28	18	43
86	C	86	71	58	43	18	55
87	D	84	55	35	21	11	42
88	C	96	84	65	45	21	62
89	E	67	40	23	16	10	32
90	A	67	37	20	11	10	30
91	C	92	81	68	52	27	64
92	B	58	45	43	41	36	45

Part B—With Graphing Calculator (Average number correct = 9.1)

Question #	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92
Correct/Incorrect																	
Percent of Students Answering Correctly	73	57	71	55	40	56	69	61	58	43	55	42	62	32	30	64	45

76



inc on $(-2, 1) \cup (1, 3)$

B

77

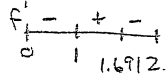
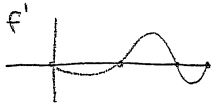
I. $\lim_{x \rightarrow 2^-} f(x) \Rightarrow$ exists \checkmark

II $\lim_{x \rightarrow 2^+} f(x) \Rightarrow$ exists \checkmark

III. $\lim_{x \rightarrow 2} f(x) \Rightarrow$ DNE b/c $\lim_{x \rightarrow 2^-} \neq \lim_{x \rightarrow 2^+}$

C

78 $f'(x) = \sin(x^3 - x) \quad 0 \leq x \leq 2$

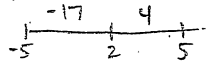


B

79

$\int_{-5}^2 f(x) dx = -17, \quad \int_5^2 f(x) dx = -4$

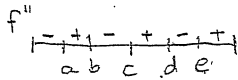
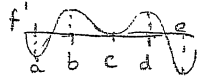
$\Rightarrow \int_2^5 f(x) dx = 4$



$-17 + 4 = -13$

B

80 $f'(x) = x^2 \cos(x^2)$



5 times

E

81 $G(x) = \int f(x) dx \quad G(2) = -7$
 $G(4) = ?$

$G(4) = G(2) + \int_2^4 f(x) dx$
 $= -7 + \int_2^4 f(x) dx$

E

82 $v(t) = 7 - (1.01)^{-t^2}$

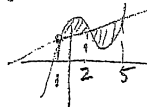
$a(3) = v'(3)$

$\approx .055$

B

83 $y = x^3 - 8x^2 + 18x - 5$

$y = x + 5$



$A = \int_1^2 (x^3 - 8x^2 + 18x - 5) - (x + 5) dx + \int_2^5 (x + 5) - (x^3 - 8x^2 + 18x - 5) dx$

$A = .58333 + (11.25) =$

$= 11.833$

B

84

rel. max @ $x=4$

C

85

$$\int_{-4}^{-1} f'(x) dx$$

$$= f(x) \Big|_{-4}^{-1}$$

$$= f(-1) - f(-4)$$

$$= -1.5 - .75$$

$$= -2.25$$

B

86

position

initial position @ $(0,0) \rightarrow A, C, \text{ or } E$

\hookrightarrow inf pt @ $x=2 \rightarrow C \text{ or } E$

C

87

$$x(3) = x(0) + \int_0^3 v(t) dt$$

$$= 2 + \int_0^3 \sqrt{1+t^2} dt$$

$$= 2 + 4.512$$

$$= 6.512$$

D

88

$$S = 4\pi r^2$$

$$\frac{dS}{dt} = 8\pi r \frac{dr}{dt}$$

$$= 8\pi(3)(-2)$$

$$= -150.796$$

$$= -48\pi$$

C

$$\frac{dr}{dt} = -20 \text{ cm/sec}$$

$$r = 3 \text{ cm}$$

$$\frac{dS}{dt} = ?$$

89 $f \rightarrow \text{cont.}$ $\text{noc} \rightarrow f'(c) = 0$

f' DNE @ some c .

- A. all deriv +, X
- B. all deriv. - X
- C. all deriv. exists X
- D. all deriv. exist but f' not cont. X
- E. some derive DNE \checkmark**

90

$f'(3) = 2$ $f'' < 0 \rightarrow$ concave down

A.

$f'(3) = \frac{6.5 - 2.5}{4 - 2}$

$$= \frac{4}{2}$$

$$= 2 \checkmark$$

B. $f'(3) = \frac{7 - 2.5}{4 - 2}$

$$= \frac{4.5}{2}$$

$$\neq 2.25$$

C. $f'(3) = \frac{6.5 - 3}{4 - 2}$

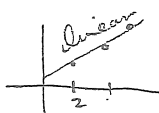
$$= \frac{2.5}{2}$$

$$\neq 1.25$$

D. $f'(3) = \frac{7 - 3}{4 - 2}$

$$= \frac{4}{2}$$

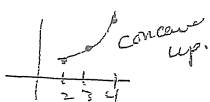
$$= 2 \checkmark$$



E. $f'(3) = \frac{7.5 - 3.5}{4 - 2}$

$$= \frac{4}{2}$$

$$= 2 \checkmark$$



91

$$\text{avg} = \frac{1}{3-1} \int_{-1}^3 \frac{\cos x}{x^2 + x + 2} dx$$

$$= \frac{1}{2} (.7318)$$

$$= .183$$

C

92

B

base height

$$\left(\int_0^4 f(x) dx \right) (7)$$

$$7 \int_0^4 f(x) dx$$