

2015

**Answer Key for AP Calculus AB
Practice Exam, Section I**

Question 76: B

Question 77: B

Question 78: D

Question 79: A

Question 80: E

Question 81: B

Question 82: C

Question 83: B

Question 84: D

Question 85: E

Question 86: A

Question 87: E

Question 88: A

Question 89: A

Question 90: D

Question 91: D

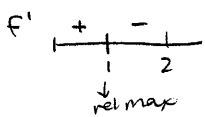
Question 92: B

76) $P'(1) = 0.076$
 rate of pop @ $t=1$ years after Jan 1, 2010
 so, B or C
 $P'(1) > 0 \rightarrow$ pop inc
 \therefore , **B**

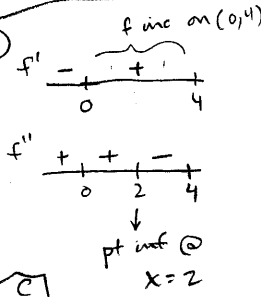
77) avg rate change = $\frac{f(b)-f(a)}{b-a}$
 $= \frac{f(10)-f(0)}{10-0}$
 $= \frac{-20-5}{10}$
 $= -\frac{5}{2}$
B

78) oil leaks of = $\int_0^{0.5} L(t) dt$
 $= 0.541$
D

79) $h(x) = \frac{f(x)}{g(x)}$
 $h'(x) = \frac{g(x)f'(x) - f(x)g'(x)}{[g(x)]^2}$
 $h'(0) = \frac{g(0)f'(0) - f(0)g'(0)}{[g(0)]^2}$
 $= \frac{2(4) - 3(\pi)}{(2)^2}$
 $= \frac{8-3\pi}{4}$
A

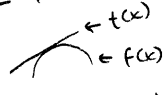
80) abs min @ rel. min or endpoint
 f' 
 $f(0) = 0$
 $f(2) = \int_0^2 f'(x) dx$
 $= \int_0^1 f'(x) dx + \int_1^2 f'(x) dx$
 $> \int_0^2 f'(x) dx$
 \therefore , $f(2) < 0$
 abs min @ $x=2$
E


81) area = $\int_0^{3.2} (\sqrt{4x-x^2} - \frac{x}{2}) dx$
 $= 2.829$
B

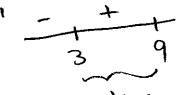
82) 
C

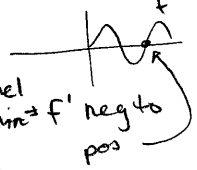
83) $\frac{dv}{dt} = v(t)$
 $v'(t) = a(t)$
 $0 = -40t^3 + 18t + 8$
 $t = .831$
B

84) $\int_1^3 f(x) dx + \int_3^7 f(x) dx = \int_1^7 f(x) dx$
 $\int_1^3 f(x) dx + 32 = 42$
 $\int_1^3 f(x) dx = 10$
 $2 \int_1^3 f(x) dx = 20$
D

85) tangent line \geq graph of function
 $t(x) \geq f(x)$
 over approx \rightarrow 
 $f(x)$ conc. down
 so $f'' < 0$
E

86) 
 $\lim_{x \rightarrow 2} f(x)$ DNE, A is FALSE
 $\lim_{x \rightarrow 2} f(x) = -\infty$ or ∞ , so B or C might be true
 $\lim_{x \rightarrow \infty} f(x)$ is unknown, E or D might be true
A

87) h inc $\rightarrow h' > 0$
 $h(x) = \int_{-1}^x f(t) dt$
 $h'(x) = f(x)$
 h' 
 $h' > 0$
 h inc on $(3,9)$
E

88) $f'(x) = \sin(x^2)$

 rel min $\rightarrow f'$ neg to pos
 @ $x = 2.507$
A

89) $\lim_{x \rightarrow a} f(x) = f(a)$
 means f cont @ $x=a$
A

90) avg temp = $\frac{1}{b-a} \int_a^b \text{Temp}$
 $= \frac{1}{10-0} \int_0^{10} F(t) dt$
 $= 148.820$
D

91) $f(2) = f(3) + \int_3^2 f'(x) dx$
 $= 7 + \int_3^2 \cos(x^2) dx$
 $= 6.759$
D

92) avg value = $\frac{1}{2-(-3)} \int_{-3}^2 h(x) dx$
 $= \frac{1}{5} \int_{-3}^2 h(x) dx$
 $= \frac{1}{5} (-\#)$
 ≤ 0
A

B. avg rate change = $\frac{h(2)-h(-3)}{2-(-3)}$
 $= \frac{1-(-2)}{5}$
 $= \frac{3}{5}$
 \therefore , **B** greatest value

C. $\int_{-3}^2 h(x) dx < 0$ E. $h'(0) = \text{slope of } h \text{ @ } x=0$
 D. $\int_{-3}^0 h(x) dx < 0$ $h'(0) < 0$