

~~XXXXXXXXXX~~
CALC I EXAM III
Spring 2021

Pg 1 ne

① B② E③ A④ E⑤ B⑥ A⑦ D⑧ C⑨ C⑩ B⑪ C⑫ E⑬ E ~~(A)~~⑭ A⑮ B⑯ D⑰ E⑱ A⑲ D⑳ B㉑ D㉒ B㉓ C㉔ E㉕ A㉖ D㉗ A㉘ A㉙ B㉚ C㉛ E㉜ A㉝ C㉞ X ~~(A)~~㉟ B = -8⇓
WORK ON
NEXT PgI threw out
this question

35. $\lim_{x \rightarrow \infty} \frac{6x^3 - Bx}{-2x^3 + B} = -4$

$\Rightarrow \lim_{x \rightarrow \infty} \frac{\frac{6x^3}{x^3} - \frac{Bx}{x^3}}{\frac{-2x^3}{x^3} + \frac{B}{x^3}} = -4$

$\Rightarrow \lim_{x \rightarrow \infty} \frac{6 - \frac{B}{x^2}}{-2 + \frac{B}{x^3}} = -4$

$\Rightarrow \frac{B}{-2} = -4$ Py rule

$\Rightarrow \boxed{B = 8}$

36. $A = (3x)(2y) \Rightarrow$ so $A(x) = 6x(-x+20)$
 $= 6xy$
 $= -6x^2 + 120x$

And $8x + 8y = 160$

$\Rightarrow 8y = -8x + 160$

$\Rightarrow y = -x + 20$

on $[0, 20]$

$\Rightarrow A'(x) = -12x + 120$

Critical Values

TYPE I:

$A' = 0$

$\Rightarrow -12x + 120 = 0$

$\Rightarrow x = 10$

TYPE II:

A' D.N.E.

NONE

(polynomial)

$A(0) = 0 + 0 = 0$

$A(20) = -6(20)^2 + 120(20)$
 $= -2400 + 2400 = 0$

$A(10) = -6(10)^2 + 120(10)$
 $= -600 + 1200 = 600$

so $\boxed{x = 10}$

(*)

$\frac{20}{3}$

37. $A = 2(x^2) + 4(xy)$
 $= 2x^2 + 4xy$

And $10x + 5y = 200$

$\Rightarrow 5y = -10x + 200$

$\Rightarrow y = -2x + 40$

on $[0, 20]$

so $\boxed{x = \frac{40}{3} \text{ \& } y = \frac{40}{3}}$

so: $A(x) = 2x^2 + 4x(-2x+40)$
 $= 2x^2 - 8x^2 + 160x$
 $= -6x^2 + 160x$

$\Rightarrow A'(x) = -12x + 160$

Critical values

TYPE I: $A' = 0$

$-12x + 160 = 0$

$\Rightarrow x = \frac{-160}{-12}$
 $= \frac{40}{3}$

$A(0) = 0 + 0 = 0$

$A(20) = -6(20)^2 + 160(20)$
 $= -2400 + 3200 = 800$

$A(\frac{40}{3}) = 6(\frac{40}{3})^2 + 160(\frac{40}{3})$
 $= 1066.7$

$y = -2(4\frac{1}{3}) + 40 = \frac{40}{3}$

