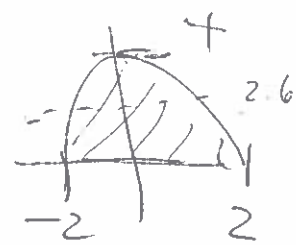
Average Value

between a & b

$$\leftarrow \int_a^b f(x)\,dx$$

$$\text{Ave. Value} = \frac{\int_a^b f(x)\,dx}{b-a}$$

Ex $\quad y = 4 - x^2$



Find average value between -2 & 2

FTC.

$$\frac{\int_{-2}^{2} 4 - x^2\,dx}{2-(-2)} = \frac{4x - \frac{x^3}{3}\Big|_{-2}^{2}}{4}$$

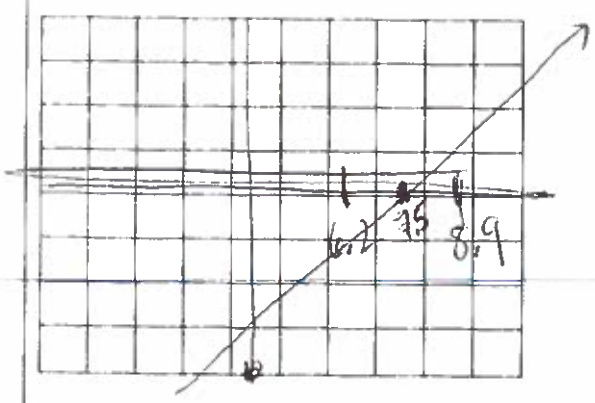
$$= \frac{\left(4(2) - \frac{(2)^3}{3}\right) - \left(4(-2) - \frac{(-2)^3}{3}\right)}{4}$$

Last Topic

Substitution with Definite Integral

Ex $\int_0^4 \sin(x^2) \, x \, dx$

13. Did the student graph the second derivative identify the concavity at every data point?



X:	-2	4	6	8	10	12	14	16	18
Y''	-9	-6	-5	+1	+3	+5	+7	+9	+13
Concavity? Up or Down	down	down	down	UP	UP	UP	UP	UP	UP

14. Did the student take the second derivative and identify concavity for the zero of the cubic regression?

Y''= 60Mx + 2B 1.16 72.5x + 10

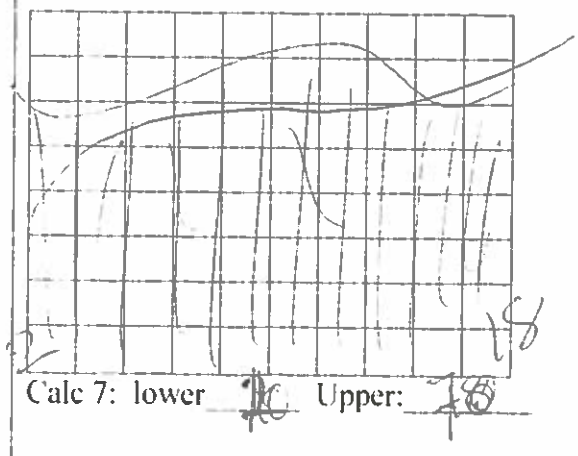
Zero: (from #9): ~~1.20~~ zero was at 1.2

Y'' (zero): $y''(1.2) = -1.1$

Were inflection points identified?

Y''=0 at -b/(6a): 7.5

15. Was the area under the best regression and between the first and last values found using calculator and the Fundamental Theorem?



Calc 7: lower ~~1~~ 2 Upper: ~~18~~ 18

(calc 7: $\int f(x)\,dx$

$\int f(x)\,dx =$ 225.64

Cubic

Regression f(x): $5.72x^3 - 7.4x^2 + .05x + 2.56$

Antiderivative: F(x): $5.72x^4/4 - 7.4x^3/3 + .05x^2/2 + 2.56x + C$

F(upper)-F(lower): $Y_1(70) - Y_1(10)$

$253.57 - 27.921 = 225.64$

16. Was the area under the best regression and between the first and last values approximated using left and right endpoint rectangles?

sum(seq(Y1, X, 10, 10 ——— 70 $\frac{60}{8}$ =

X:	10	17.5	25	32.5	40	47.5	55	62.5	70
Y:	27	51	63	55					

Sum of 8 rectangles left endpoints: 220.18 Right endpoints: 231.05

17. Were the units identified for the area under the curve?

Units (y) * Units (x) = minutes x feet ft·mins

Was the average value given?

Area (from 15) divided by (last x-first x): $\frac{225.64 \text{ ft·mins}}{70-10 \text{ mins}} = 3.76$ ft

18. Did the student write two reviews of other students' projects? Were two reviews written of the student's paper? Who is reviewing you?_____ and _____

Notes for review 1:

Notes for review2:

19. Did the student do a classroom presentation on time or was a You Tube video link provided?

20. Was the final project handed in on time?