

$$C(x) = -0.005x^2 + 20x + 150$$

C is cost in \$, x is no of units

① Find the average rate of change
of cost from $x=500$ to $x=1000$.

$$\frac{Y_2 - Y_1}{X_2 - X_1} = \frac{C(1000) - C(500)}{1000 - 500} = \$12.50/\text{unit}$$

positive

As production increases from 500 to 1000 units, the cost increases by an average of \$12.50 per unit.

$$C(x) = -0.005x^2 + 20x + 150$$

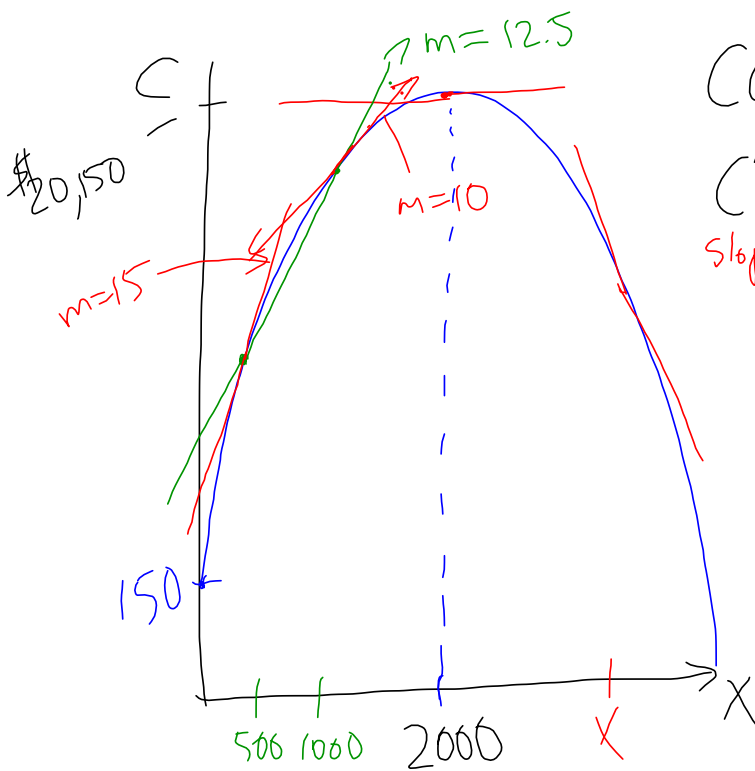
Find $C'(500)$. $C'(x) = -0.01x + 20$

$$C'(500) = -0.01(500) + 20 = \$15/\text{unit}$$

$$\lim_{h \rightarrow 0} \frac{C(500+h) - C(500)}{(500+h) - (500)} = C'(500)$$

At a production of 500 units,
the cost is increasing by \$5 per unit.

$$C'(1000) = \$10 \text{ per unit}$$



$$C(x) = -0.005x^2 + 20x + 150$$

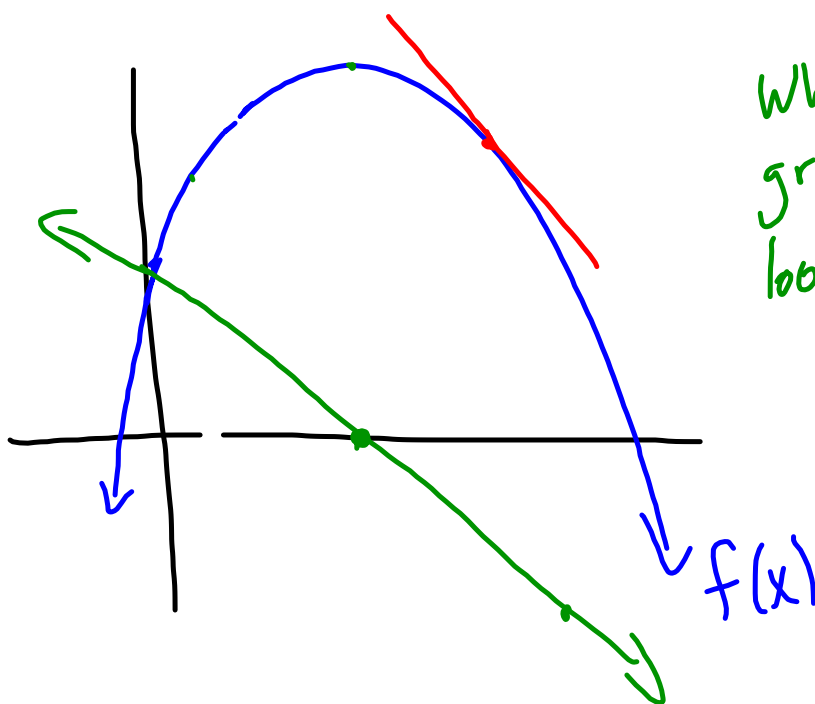
$$C'(x) = -0.01x + 20$$

Slope

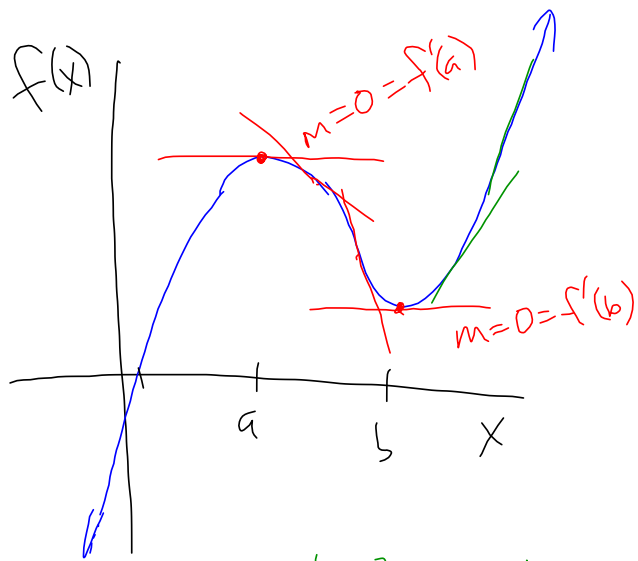
$$0 = -0.01x + 20$$

$$0.01x = 20$$

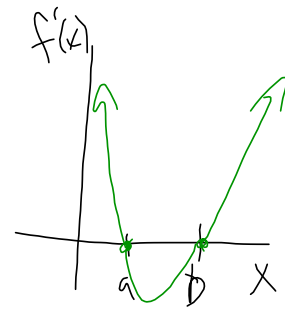
$$x = 2000$$



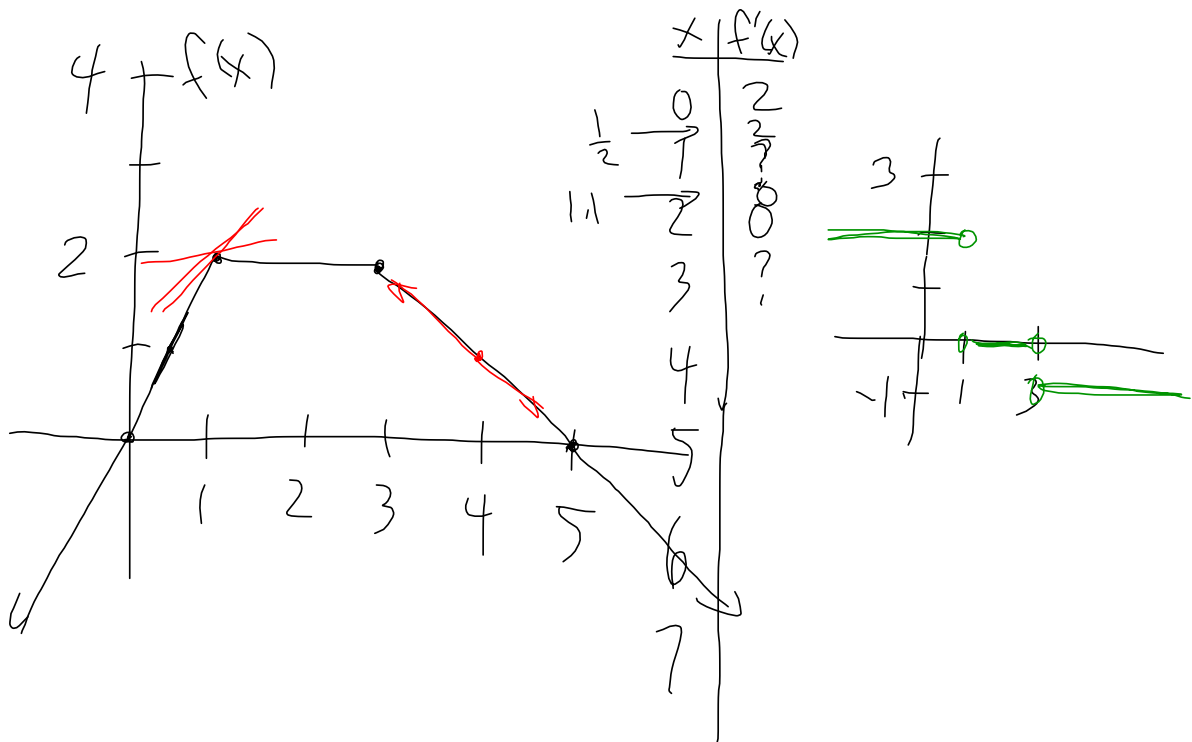
What does the graph of $f'(x)$ look like?



x	$f'(x)$
	+
a	0
	-
b	0
	+



$y = ax^3 + bx^2 + cx + d$ #s get bigger
 $y' = 3ax^2 + 2bx + c$



Suggested. 11.4: 47/49, 49/51

8th edition

9th edition