

1

Day 40 Monday Dec 3, 2012

Sit in groups of 3 as shown on the
Screen over there \longrightarrow

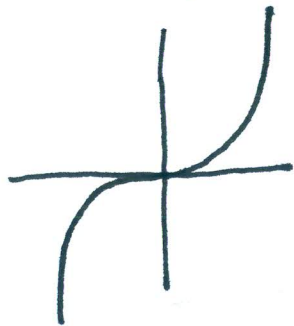
Continue Discussion of Section 7-1

Example Similar to #65 in Section 7-1

Find Area of region bounded by $y = x^5$
 $y = 16x$

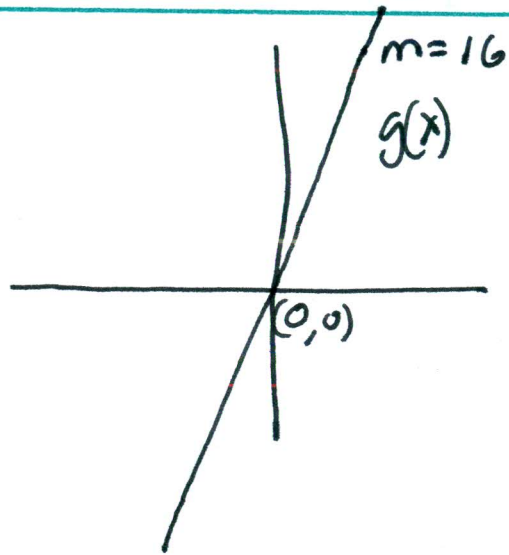
Solution We must figure out how the graphs look.

$$f(x) = x^5$$



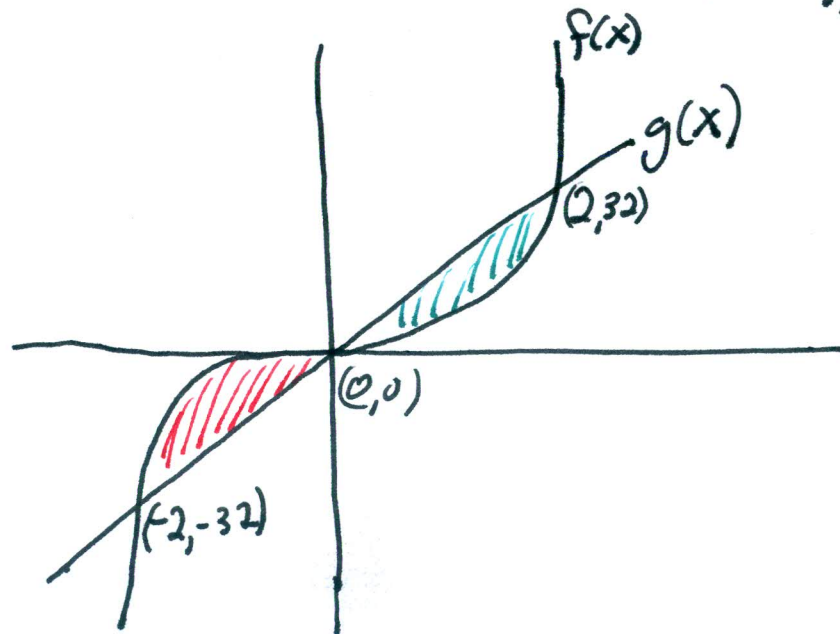
x	y
-3	$(-3)^5 = -243$
-2	$(-2)^5 = -32$
-1	$(-1)^5 = -1$
0	$0^5 = 0$
1	$1^5 = 1$
2	$2^5 = 32$

$$g(x) = 16x$$



x	y
-3	-48
-2	-32
-1	-16
0	0
1	16
2	32
3	48

Notice that the graphs cross at $(-2, -32)$, $(0, 0)$, $(2, 32)$



Unsigned area (USA)

USA = red area + green area
 (f is curve on top) (g is curve on top)

$$= \int_{x=-2}^{x=0} f(x) - g(x) dx + \int_{x=0}^{x=2} g(x) - f(x) dx$$

$$= \int_{x=-2}^{x=0} x^5 - 16x dx + \int_{x=0}^{x=2} 16x - x^5 dx$$

Pause to introduce notation

The symbol $H(x) \Big|_{x=a}^{x=b}$ means $H(b) - H(a)$

Example $(x^3 - 5x^2 + 11) \Big|_{x=1}^{x=2} = (2^3 - 5(2)^2 + 11) - (1^3 - 5(1)^2 + 11)$

