

Suppose $\int_{-2}^5 f(x) dx = 18$, $\int_{-2}^5 g(x) dx = 5$, $\int_{-2}^5 h(x) dx = -11$ and $\int_{-2}^8 f(x) dx = 0$, find

22. $\int_{-2}^5 (f(x) + g(x)) dx$

23. $\int_{-2}^5 [f(x) + g(x) - h(x)] dx$
 $18 + 5 - (-11) = 34$

24. $\int_5^{-2} 4g(x) dx$

25. $\int_{-2}^5 (g(x) + 2) dx$

26. $\int_{-2}^5 (f(x) - 6) dx$

27. $\int_0^7 h(x-2) dx$

28. $\int_{-4}^3 g(x+2) dx$

29. $\int_5^8 f(x) dx = -18$

30. $\int_1^8 [f(x-3) + 3] dx$

(22) $\int_{-2}^5 f(x) dx + \int_{-2}^5 g(x) dx = 18 + 5 = 23$

(24) $\int_5^{-2} 4g(x) dx = -4 \int_{-2}^5 g(x) dx = -20$

(29) $\int_{-2}^5 f(x) dx + \int_5^8 f(x) dx = \int_{-2}^8 f(x) dx$
 $18 + \int_5^8 f(x) dx = 0$
 $\int_5^8 f(x) dx = -18$

Suppose $\int_{-2}^5 f(x) dx = 18$, $\int_{-2}^5 g(x) dx = 5$, $\int_{-2}^5 h(x) dx = -11$ and $\int_{-2}^8 f(x) dx = 0$, find

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30. $\int_1^8 [f(x-3) + 3] dx$

25 $\int_{-2}^5 g(x) dx + \int_{-2}^5 2 dx = 5 + 14 = 19$

26 $\int_{-2}^5 f(x) dx - \int_{-2}^5 6 dx = 18 - 42 = -24$

Suppose $\int_{-2}^5 f(x) dx = 18$, $\int_{-2}^5 g(x) dx = 5$, $\int_{-2}^5 h(x) dx = -11$ and $\int_{-2}^8 f(x) dx = 0$, find

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23. $\int_{-2}^5 [f(x) + g(x) - h(x)] dx$

24. $\int_5^{-2} 4g(x) dx$

25. $\int_{-2}^5 (g(x) + 2) dx$

26. $\int_{-2}^5 (f(x) - 6) dx$

27. $\int_0^7 h(x-2) dx$
 $x=0$

28. $\int_{x=-4}^3 g(x+2) dx$

29. $\int_5^8 f(x) dx$

30. $\int_1^8 [f(x-3) + 3] dx$

28

$u = x + 2$
 $du = dx$

$\int_{u=-2}^5 g(u) du = 5$

27

$\int_2^5 h(u) du = -11$

$u = x - 2$
 $du = dx$

Suppose $\int_{-2}^5 f(x) dx = 18$, $\int_{-2}^5 g(x) dx = 5$, $\int_{-2}^5 h(x) dx = -11$ and $\int_{-2}^8 f(x) dx = 0$, find

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28. $\int_{-4}^3 g(x+2) dx$

29. $\int_5^8 f(x) dx$

30. $\int_1^8 [f(x-3) + 3] dx$

(30)

$$= \int_{x=1}^8 f(x-3) dx + \int_1^8 3 dx$$

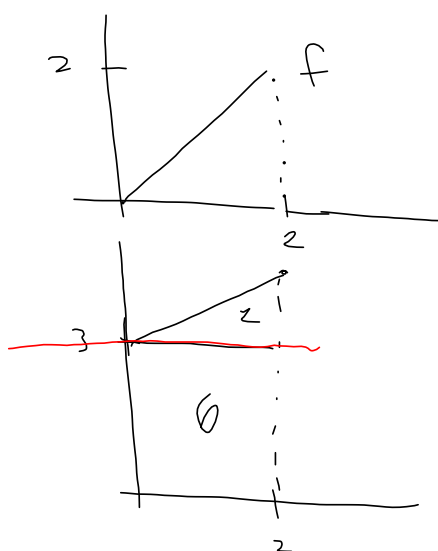
$u = x-3$
 $du = dx$

$$= \int_{u=-2}^5 f(u) du + 21$$

$$= 18 + 21$$

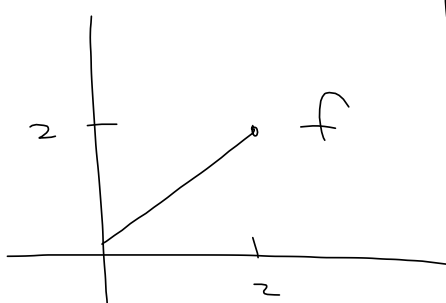
$$= 39$$

Hyp #1 (2)

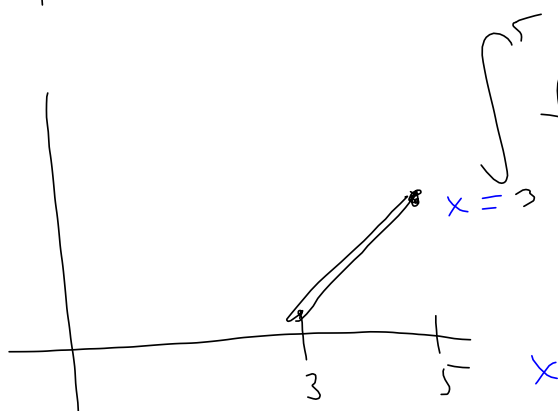


$$\int_0^2 f(x) dx = 2$$

$$\begin{aligned} \int_0^2 (f(x) + 3) dx &= 8 \\ &= \int_0^2 f(x) dx + \int_0^2 3 dx \\ &= 2 + 6 \end{aligned}$$

Hyf #2(27)

$$\int_0^2 f(x) dx = 2$$

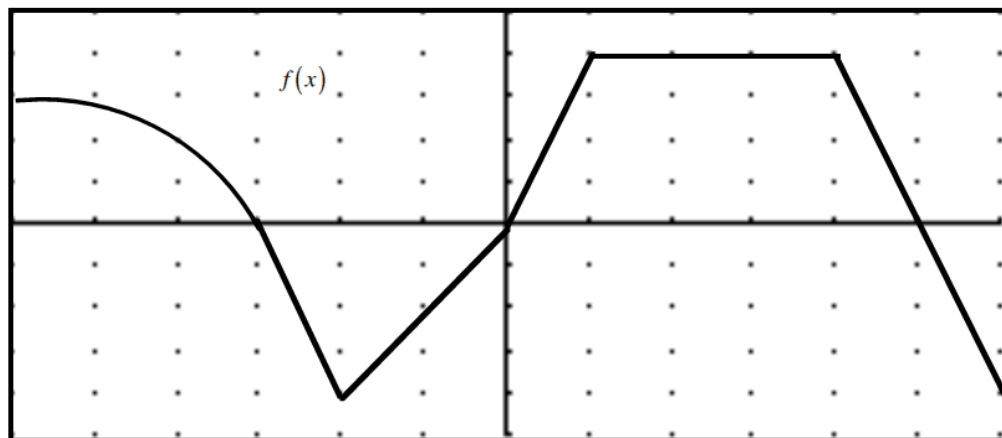


$$\int_3^5 f(x-3) dx = 2$$

$$u = x - 3$$

$$du = dx$$

$$\int_0^2 f(u) du$$

The Definite Integral as Area - Homework

1. $\int_0^1 f(x) dx$

2. $\int_2^4 f(x) dx$

3. $\int_1^4 f(x) dx$

4. $\int_5^6 f(x) dx$

5. $\int_4^5 f(x) dx$

6. $\int_5^6 f(x) dx$

7. $\int_4^6 f(x) dx$

8. $\int_0^6 f(x) dx$

9. $\int_3^2 f(x) dx$

10. $\int_5^0 f(x) dx$

11. $\int_6^0 f(x) dx$

12. $\int_{-3}^0 f(x) dx$

13. $\int_{-3}^0 f(x) dx$

14. $\int_{-3}^2 f(x) dx$

15. $\int_{-3}^4 f(x) dx$

16. $\int_{-6}^{-3} f(x) dx$

17. $\int_{-3}^{-6} f(x) dx$

18. $\int_{-6}^0 f(x) dx$

19. $\int_{-6}^6 f(x) dx$

20. $\int_6^{-6} f(x) dx$

21. $\left| \int_{-2}^1 f(x) dx \right|$

22. $\int_{-2}^1 |f(x)| dx$

23. $\int_{-2}^1 |-f(x)| dx$

24. $\int_{-6}^6 |f(x)| dx$

Suppose that $\int_0^2 f(x) dx = 2$, $\int_1^2 f(x) dx = -1$, $\int_2^4 f(x) dx = 7$, evaluate the following:

25. $\int_1^4 f(x) dx$

26. $\int_0^4 3f(x) dx$

27. $\int_0^1 f(x) dx$

28. $\int_0^1 f(x+1) dx$

29. $\int_0^2 (f(x) + 3) dx$

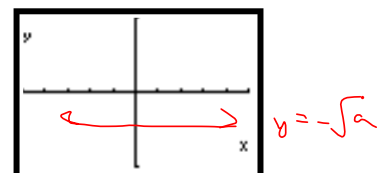
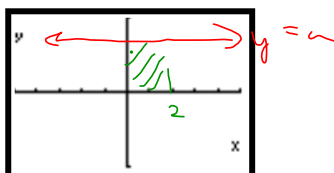
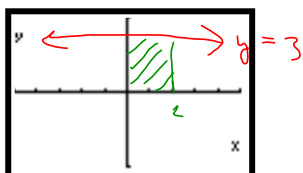
30. $\int_2^4 f(x-2) dx$

31. If $\int_0^3 f(x) dx = -1$, find $\int_{-3}^3 f(x) dx$ if f is a) even _____ b) odd _____

The problems on this page and the next should be done without calculators.

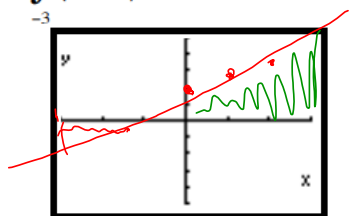
32. For each function below, use a sketch of f to evaluate the 4 definite integrals on top given the statement on the left. (a is a positive constant)

	$\int_0^2 f(x) dx$	$\int_1^4 f(x) dx$	$\int_5^1 f(x) dx$	$\left \int_9^{-9} f(x) dx \right $
$f(x) = 3$	6	9	-12	54
$f(x) = a$	$2a$			
$f(x) = -\sqrt{a}$	$-2\sqrt{a}$			

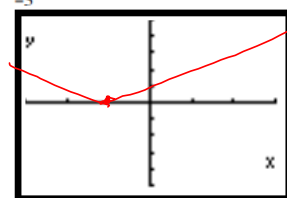


33. Evaluate the following by making a sketch of the function.

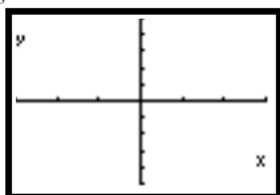
a. $\int_{-3}^3 (x+2) dx$



b. $\int_{-3}^3 |x+2| dx$



c. $\int_{-3}^3 ||x|+2| dx$



d. $\int_{-3}^3 |2-|x|| dx$

