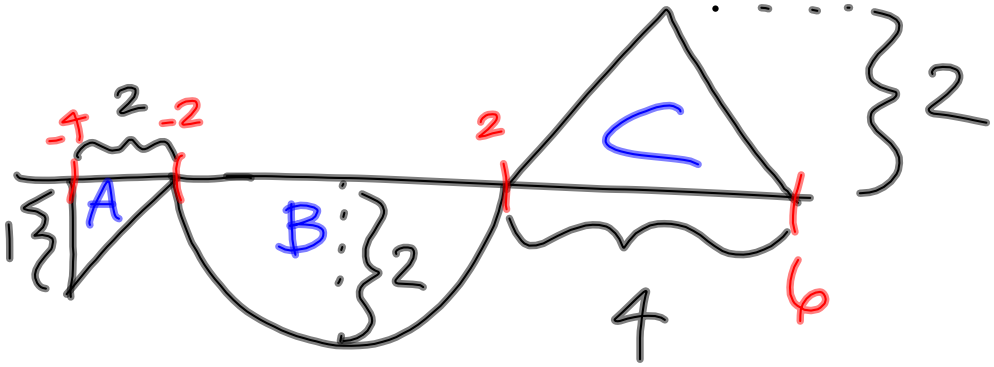
45. d. $\int_{-4}^{6} f(x)\,dx = -$ area of A $-$ area of B $+$ area of C



c. $\int_{-4}^{2} f(x)\,dx =$

$\int [f(x)+2]\,dx$

$= \int f(x)\,dx + \int_{-4}^{6} 2\,dx$

4.4 The Fundamental Theorem of Calculus

If f is cts on [a,b] and F is antiderivative of f on [a,b], then

$$\int_a^b f(x)\,dx = F(b) - F(a)$$

10. $\int_1^3 (3x^2+5x-4)\,dx$

$= x^3 + \frac{5}{2}x^2 - 4x \Big|_{x=1}^{3}$

$= \left[3^3+\frac{5}{2}(3)^2-4(3)\right] - \left[1^3+\frac{5}{2}(1)^2-4(1)\right]$

$= 27 + \frac{45}{2} - 12 - 1 - \frac{5}{2} + 4$

$= 18 + 20 = \boxed{38}$

24. $\int_1^4 (3-|x-3|)\,dx$ $\qquad |x-3| = \begin{cases} x-3, & x \geq 3 \\ -(x-3), & x<3 \end{cases}$

$= \int_1^4 3\,dx - \int_1^4 |x-3|\,dx$

$= \int_1^4 3\,dx - \left[\int_1^3 -(x-3)\,dx + \int_3^4 (x-3)\,dx\right]$

$= 3x\Big|_1^4 + \left(\frac{x^2}{2}-3x\right)\Big|_1^3 - \left(\frac{x^2}{2}-3x\right)\Big|_3^4$

$3(4)-3(1)$

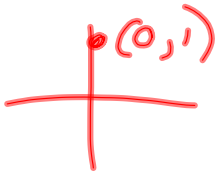
$= 12-3+\frac{9}{2}-9-\frac{1}{2}+3-8+12+\frac{9}{2}-9$

$= 9+9-9+15-17-\frac{1}{2}$

$= \boxed{\frac{13}{2}}$

$$32.\ \int_{-\pi/2}^{\pi/2} (2t+\cos t)\,dt$$

$$= t^2 + \sin t \Big|_{-\pi/2}^{\pi/2}$$



$$= \left(\frac{\pi}{2}\right)^2 + \sin\frac{\pi}{2} - \left[\left(\frac{-\pi}{2}\right)^2 + \sin\left(\frac{-\pi}{2}\right)\right]$$

$$= 1 - (-1) = 2$$

4.4

13, 15, 23, 31