

Homework 22

$$b) f(x) = \frac{t^2 - 1}{\sqrt{t}} = \frac{t^2}{\sqrt{t}} - \frac{1}{\sqrt{t}} = \frac{t^2}{t^{\frac{1}{2}}} - \frac{1}{t^{\frac{1}{2}}} = t^{3/2} - t^{-\frac{1}{2}}$$

$$F(x) = \frac{2}{5} t^{\frac{5}{2}} - 2t^{\frac{1}{2}} + C$$

$$10) f''(x) = -\cos(x) + \sin(x) \quad f(0) = 1 \quad f(\pi) = 0$$

$$f'(x) = -\sin(x) + -\cos(x) + C_1$$

$$f(x) = \cos(x) - \sin(x) + C_1 x + C_2$$

$$1 = \cos(0) - \sin(0) + C_1 \cdot 0 + C_2$$

$$1 = 1 - 0 - 0 + C_2$$

$$1 = 1 + C_2$$

$$C_2 = 0$$

$$0 = \cos(\pi) - \sin(\pi) + C_1 \cdot \pi$$

$$0 = -1 - 0 + C_1 \pi$$

$$1 = C_1 \pi$$

$$C_1 = \frac{1}{\pi}$$

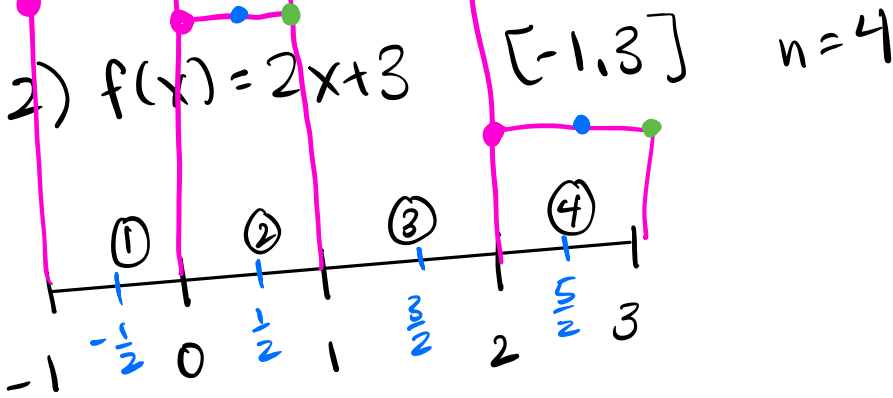
$$f(x) = \cos(x) - \sin(x) + \frac{1}{\pi} x$$

$$5) f(x) = x^2 \sqrt[3]{x} - 4 \cot(x) \csc(x) = x^{7/3} - 4 \cot(x) \csc(x)$$

\uparrow \uparrow
 $x^{2/3}$ $x^{1/3}$

$$F(x) = \frac{3}{10} x^{10/3} + 4 \csc(x) + C$$

Homework 23



left:

$$\begin{aligned} f(-1) &= 1 \\ f(0) &= 3 \\ f(1) &= 5 \\ f(2) &= 7 \end{aligned}$$

$$1 [1 + 3 + 5 + 7] = 16$$

mid:

$$\begin{aligned} f(-\frac{1}{2}) &= 2 \\ f(\frac{1}{2}) &= 4 \\ f(\frac{3}{2}) &= 6 \\ f(\frac{5}{2}) &= 8 \end{aligned}$$

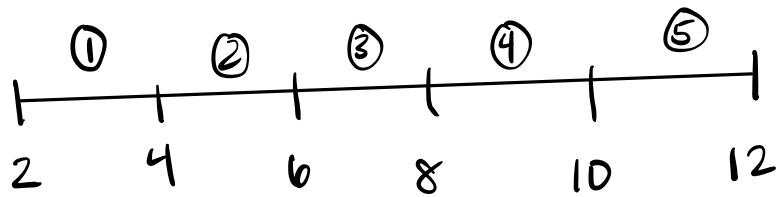
$$1 [2 + 4 + 6 + 8] = 20$$

right:

$$\begin{aligned} f(0) &= 3 \\ f(1) &= 5 \\ f(2) &= 7 \\ f(3) &= 9 \end{aligned}$$

$$1 [3 + 5 + 7 + 9] = 24$$

$$4) f(x) = 3x - 6 \quad [2, 12] \quad n=5$$



$$f(3) = 3$$

$$f(5) = 9$$

$$f(7) = 15$$

$$f(9) = 21$$

$$f(11) = 27$$

$$2 [3 + 9 + 15 + 21 + 27] = 150$$

