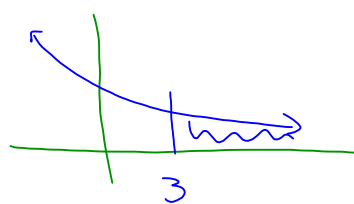


$$\begin{array}{ccccc}
 2 & 3 & 5 & 8 & 13 \\
 6 & -2 & -1 & 3 & 9 \\
 \underbrace{\hspace{1cm}} & \underbrace{\hspace{1cm}} & \underbrace{\hspace{1cm}} & \underbrace{\hspace{1cm}} & \underbrace{\hspace{1cm}}
 \end{array}$$

$$6(1) + (-2)(2) + (-1)(3) + 3(5)$$

11. $y = e^{-2x} = \frac{1}{e^{2x}}$



$$\lim_{b \rightarrow \infty} \int_3^b e^{-2x} dx$$

$$\lim_{b \rightarrow \infty} \left(\frac{e^{-2x}}{-2} \right) \Big|_3^b$$

$$\frac{1}{-2e^{2b}} + \frac{1}{+2(e^{2(3)})}$$

$$13. \int_{-1}^e \frac{x^2 + 1}{x} dx$$

$$\frac{x^2}{x} + \frac{1}{x}$$

$$\int_{-1}^e x + \frac{1}{x}$$

12.

$$\frac{x^{n+1}}{n+1} \cdot \frac{n}{x^n}$$

$$\frac{x \cdot n}{n+1} = x$$

$$-1 < x < 1$$

$$-1 < \frac{2}{x^2+1} < 1$$

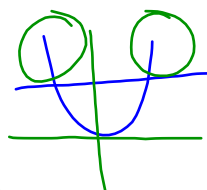
$$-1 < \frac{2}{x^2+1}$$

$$\frac{2}{x^2+1} < 1$$

$$2 < x^2 + 1$$

-1

$$x^2 > 1$$



$$-1 > x \quad x > 1$$

$$f(x) = h(x^2 - 3)$$

$$f'(2) = h'(2^2 - 3)(2 \cdot 2)$$

$$f'(2) = 4h'(1)$$

18.

$$x+y=k$$

$$y=k-x$$

$$m = \textcircled{-1}$$

$$y = x^2 + 3x + 1$$

$$\textcircled{y'} = 2x + 3$$

$$-1 = 2x + 3$$

$$-4 = 2x$$

$$x = -2$$

$$y = (-2)^2 + 3(-2) + 1 = -1$$

19.

$$7x = A(x+2) + B(2x-3)$$

$$x = -2$$

$$B = 2$$

$$x = \frac{3}{2}$$

$$A = 3$$

$$\int \frac{3}{2x-3} + \frac{2}{x+2} dx$$

$$\frac{3 \ln|2x-3|}{2} + 2 \ln|x+2| + C$$

$$1 + x + \frac{x^2}{2!} + \dots + \frac{x^n}{n!}$$

$$x = \ln 2$$

$$e^x$$
$$e^{\ln 2} = 1 + \ln 2 + \frac{(\ln 2)^2}{2!} + \dots$$

2

Position

↓ velocity

where is $v(t)$ increasing??

↓

$$v'(t) = a(t) = t$$

22.

$$\int_0^1 f'(x) g(x) dx = f(x)g(x) \Big|_0^1 - \int_0^1 f(x)g'(x)$$

$$\int dv u = uv - \int v du$$

$$5 = 4(3) - (2)(-4) - \int_0^1 f(x)g'(x)$$

$$5 = 12 + 8 - \int$$

-20

$$-15 = - \int$$

$$15 = \int$$

$$f(x) = x \sin(2x)$$

$$\sin x = x - \frac{x^3}{3!} + \frac{x^5}{5!} \dots -$$

$$x \left((2x) - \frac{(2x)^3}{3!} + \frac{(2x)^5}{5!} \right)$$

$$2x^2 - \frac{8x^4}{3!}$$

24

$$\frac{dP}{dt} = kP(m-P)$$

$$kP(200-P)$$

$$\frac{dP}{dt} = 200kP - kP^2$$

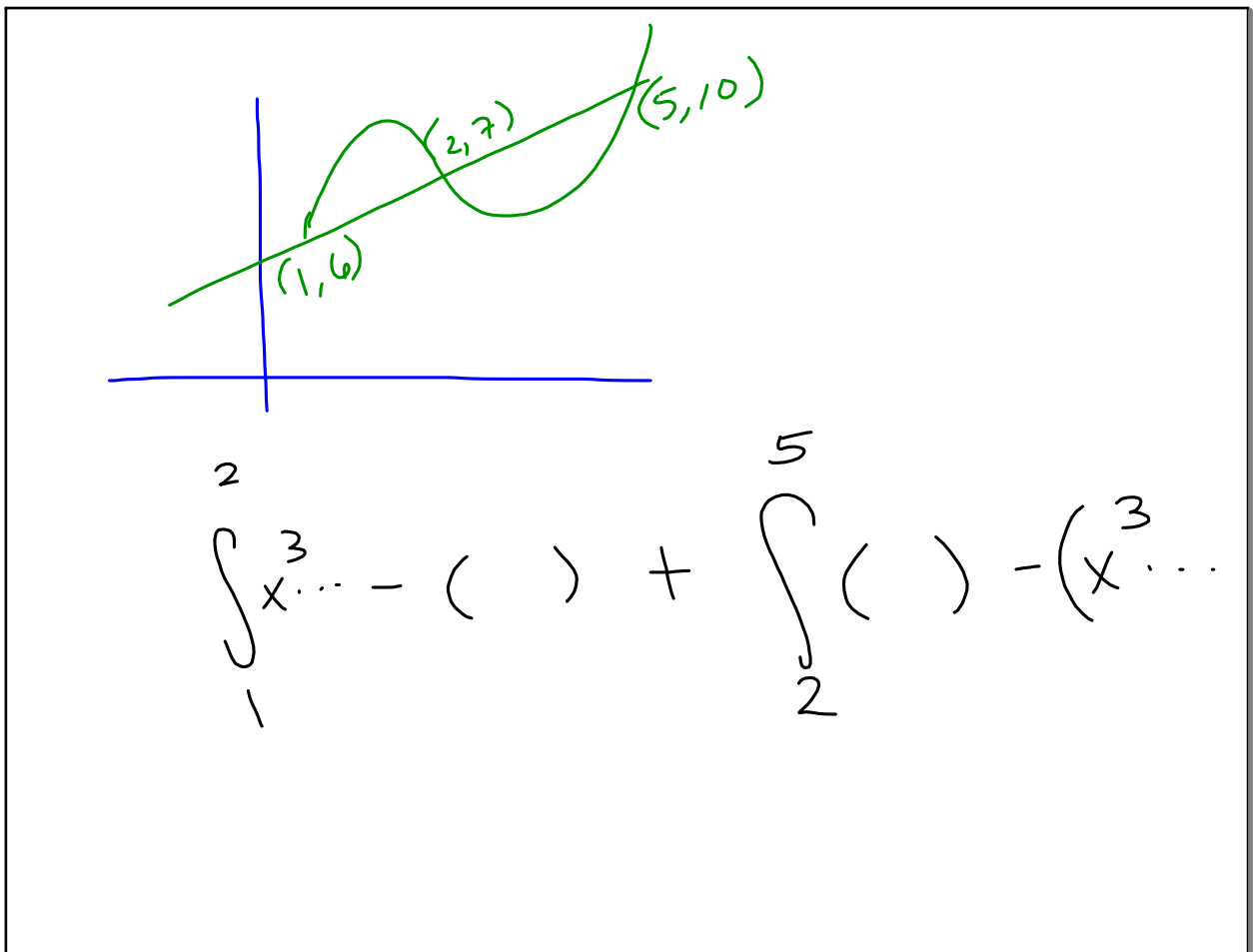
26.

$$2 \left(\frac{1}{2} \int_0^{\pi} (\sin^2 \theta)^2 d\theta \right)$$

$$\int_a^c f(x) - g(x)$$

$$\int_a^c f(x) - \int_a^c g(x)$$

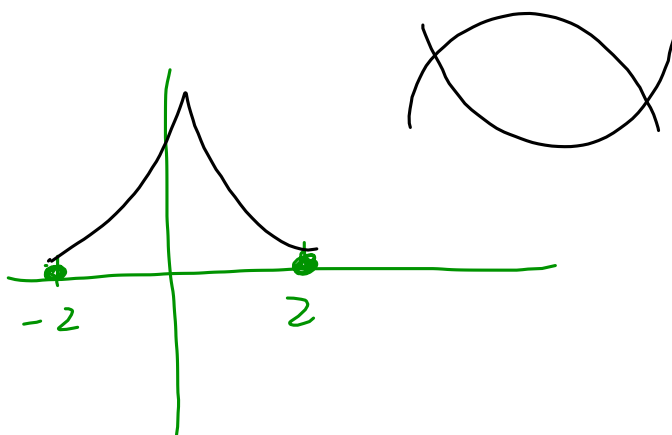
\int_a^b \int_b^c \int_a^c $(R - S)$
 $P - Q$



$$3 + \int_2^3 \underline{\underline{2x}}$$

derivative = slope

89.



$$h(x) = f(g(x))$$

$$h'(2) = f'(g(2)) \cdot g'(2)$$

$$f'(-1) \cdot 2$$

$$3 \cdot 2$$

$$\int_{\frac{1}{3}}^x \cos\left(\frac{1}{t^2}\right)$$

92.

$$B(x) = g(f(x))$$

$$B'(-3) = g'(f(-3)) \cdot f'(-3)$$

$$g'(1) \cdot \left(\frac{1}{3}\right)$$

$$-\frac{1}{2} \left(\frac{1}{3}\right)$$

$$x - \frac{x^3}{3!} + \frac{x^5}{5!}$$

$$x^2 - \frac{(x^2)^3}{3!} + \frac{(x^2)^5}{5!}$$

$$\int x^2 - \int \frac{x^6}{3!} + \int \frac{x^{10}}{5!}$$

6.

$$\frac{(x+2)(\cancel{x-2})}{\cancel{(x-2)}}$$

8.

$$\begin{array}{cccccc} 2 & 3 & 5 & 8 & 13 \\ 6 & -2 & -1 & 3 & 9 \\ \underbrace{\quad} & \underbrace{\quad} & \underbrace{\quad} & \underbrace{\quad} & \underbrace{\quad} \end{array}$$

$$6(1) + (-2)(2) + (-1)(3) + 3(5)$$

12.

$$\frac{e^{x+1} x^{x+1}}{(n+1)!} \cdot \frac{n!}{e^n x^n}$$

$n+1$

$$\lim_{n \rightarrow \infty} \frac{e \cdot x}{n+1} = 0$$

13.

$$\int_1^e \frac{x^2 + 1}{x}$$

$$\frac{x^2}{x} + \frac{1}{x}$$

$$\int_1^e x + \frac{1}{x}$$

$$\left. \frac{x^2}{2} + \ln x \right|_1^e$$

$$\frac{e^2}{2} + 1 - \left(\frac{1}{2} + 0 \right)$$

$$\frac{e^2}{2} + \frac{1}{2}$$

15.

$$f(x) = (\ln x)^2$$

$$2(\ln x)' \cdot \frac{1}{x}$$

$$f' = \frac{2 \ln x}{x}$$

$$f'' = 2 \left(\frac{x \frac{1}{x} - \ln x (1)}{x^2} \right)$$

$$f'' = 2 \left(\frac{1 - \ln x}{x^2} \right)$$

$$2 \left(\frac{\begin{matrix} \ln \sqrt{e} \\ \ln e^{\frac{1}{2}} \\ (1 - \frac{1}{2}) \end{matrix}}{e} \right)$$

16.

$$-1 < \frac{2}{x^2+1} < 1$$

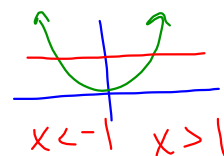
$$-1 < \frac{2}{x^2+1}$$

$$\frac{2}{x^2+1} < 1$$

$$2 < x^2+1$$

$$1 < x^2$$

$$x^2 > 1$$



$$f(x) = h(x^2 - 3)$$

$$f'(2) = h'(\cancel{2}^2 - 3) \cdot (\cancel{2} \cdot 2)$$

$$4h'(1)$$

$$\int \frac{3}{2x-3} + \frac{2}{x+2}$$

$$\frac{3 \ln |2x-3|}{2} + 2 \ln |x+2| + C$$

18.

$$x+y=k$$

$$m=-1$$

$$y = x^2 + 3x + 1$$

$$y' = 2x + 3$$

$$-1 = 2x + 3$$

$$x = -2$$

20.

$$e^x = 1 + x + \frac{x^2}{2!} + \dots + \frac{x^n}{n!}$$

$$e^{\ln 2} = 1 + \ln 2 + \dots$$

2

21.

