

Name- Priyush Chandra Chandra, IP-181100001027.

০ আষাঢ় শুক্রবার ১৪১৭
হিজরী স ৪/১/৫১
Hizri-4 Ashar 1932
১০ আষাঢ় ১৪১৭
Sunrise-04:55 A.M.

JUNE
25
FRIDAY

৭৪ জ্যৈষ্ঠ শুক্ল শুক্রবার ২০৬৬
চতুর্দশী: স: ৪/৭/৫৭
Hizri-12 Rajab 1431
২৫ জুন ২০১০
Sunset - 06:22 P.M.

$$i) \frac{dy}{dx} = \frac{y-6x}{x-y}$$

$$\Rightarrow \frac{dy}{dx} = \frac{y/x - 6}{1 - y/x} \quad \text{Let } \frac{y}{x} = v \Rightarrow \frac{dy}{dx} = x \frac{dv}{dx} + v$$

$$\Rightarrow x \frac{dv}{dx} + v = \frac{v-6}{1-v} - v$$

$$\Rightarrow x \frac{dv}{dx} = \frac{v-6}{1-v} - v = \frac{v^2-4}{1-v}$$

$$\Rightarrow x \frac{dv}{dx} = \frac{v^2-4}{1-v} \Rightarrow \frac{1-v}{v^2-4} dv = \frac{dx}{x}$$

Integrating both sides.

$$\int \frac{1-v}{v^2-4} dv = \int \frac{1}{x} dx \quad \text{Let, } v^2-4 = z$$

$$\Rightarrow 2v dv = dz$$

$$\Rightarrow \int \frac{dv}{v^2-4} = \frac{1}{2} \int \frac{2v dv}{v^2-4} = \int \frac{dx}{x}$$

$$\Rightarrow \int \frac{dv}{v^2-4} = \frac{1}{2} \log \left(\frac{y^2}{x^2} - 4 \right) = \log |x| + C$$

$$\Rightarrow \frac{1}{4} \log \left| \frac{y}{x} - 2 \right| - \frac{1}{4} \log \left| \frac{y}{x} + 2 \right| - \frac{1}{2} \log \left| \frac{y^2}{x^2} - 4 \right|$$

$$= \log |x| + C$$

T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	JULY
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	2010

১৩ আষাঢ় সোমবার ১৪১৭
 দ্বিতীয়া স ৬/২৬/১৬
 Saka-7 Ashar 1932
 মহম - ১৩ আহাৰ ১৪১৭
 Sunrise-04-56 A.M.

JUNE
 28
 MONDAY

২ আষাঢ় কৃষ্ণ সোমবার ২০৬৭
 দ্বিতীয়া স: ৬/২৬/৭৬
 Hizri-15 Rajab 1431
 ২৮ জুন ২০১০
 Sunset - 06-22 P.M.

$$\Rightarrow \left(v + x \frac{dv}{dx} \right) = \sqrt{v^2 + 1} - 1$$

$$\Rightarrow \left(v + x \frac{dv}{dx} \right) = \sqrt{v^2 + 1} - 1$$

$$\Rightarrow x \frac{dv}{dx} = \sqrt{v^2 + 1} - 1 - v = \frac{\sqrt{v^2 + 1} - (v^2 + 1)}{v}$$

$$\Rightarrow \frac{dv}{x} = \frac{v}{\sqrt{v^2 + 1} - (v^2 + 1)} \quad \begin{matrix} v^2 + 1 = z^2 \\ \Rightarrow 2v dv = 2z dz \end{matrix}$$

$$\Rightarrow \int \frac{dv}{x} = \int \frac{2 dz}{z - z^2}$$

$$\Rightarrow \log |x| + \log |c| = -\frac{1}{2} \int \frac{2z}{z^2 - z} = -\frac{1}{2} \log |z|$$

$$\Rightarrow \frac{1}{2} \log |\sqrt{v^2 + 1}| + \log x + \log e = 0$$

$$\Rightarrow \frac{1}{2} \log \left(\sqrt{\frac{y^2}{x^2} + 1} \right) + \log x = \log e$$

$$\Rightarrow \frac{1}{2} \log (\sqrt{y^2 + x^2}) - \frac{1}{2} \log (x) + \log x = \log e$$

$$\Rightarrow \frac{1}{2} \log (\sqrt{x^2 + y^2}) + \frac{1}{2} \log x = \log e$$

$$\Rightarrow \log (x \sqrt{x^2 + y^2}) = \log e^2$$

$$\Rightarrow x \cdot \sqrt{x^2 + y^2} = e^2$$

1 F S S M T W T F S S M T W T F S S M T W T F S JULY
 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 2010

২ আষাঢ় কৃষ্ণ মঙ্গলবার ২০৬৭
তৃতীয়া রা: ৮/৪/২৭
Hizri-16 Rajab 1431
২৭ জুন ২০১০
Sunrise-04:56 A.M.

JUNE
29
TUESDAY

১৪ আষাঢ় মঙ্গলবার ১৪১৭
তৃতীয়া রা ৮/৪/২৭
Saka-8 Ashar 1932
অহম - ১৪ আহার ১৪১৭
Sunset - 06:22 P.M.

$$iv) \frac{dy}{dx} = \frac{y^2 - x^2}{xy} = \frac{y}{x} - \frac{x}{y} \quad \text{Let, } \frac{y}{x} = v$$

$$\Rightarrow x + x \frac{dv}{dx} = x - \frac{1}{v} \quad \Rightarrow \frac{dy}{dx} = v + x \frac{dv}{dx}$$

$$\Rightarrow \int \frac{dx}{x} = - \int v dv$$

$$\Rightarrow \log x = - \frac{v^2}{2} + C$$

$$\Rightarrow \log |x| + \frac{v^2}{2} - C = 0$$

$$\Rightarrow \log |x| + \frac{y^2}{2x^2} - C = 0$$

$$v) \frac{dy}{dx} = (y+x)^2$$

$$\text{Let, } y+x = v$$

$$\Rightarrow \frac{dv}{dx} = 1 + v^2$$

$$\Rightarrow \frac{dy}{dx} + 1 = \frac{dv}{dx}$$

$$\Rightarrow \frac{dv}{1+v^2} = dx$$

$$\Rightarrow \tan^{-1} v = x + C$$

$$\Rightarrow \int \frac{dv}{1+v^2} = \int dx \quad \Rightarrow \tan^{-1}(y+x) - x - C = 0$$

JUNE	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T
2010	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	*