

$$(x^2 + 4)^2 = x^4 + 8x^2 + 16$$

$$(x^2 + 4)^2 = x^4 + 8x^2 + 16$$

$$x^4 + 8x^2 + 16 = x^4 + 8x^2 + 16$$

$$x^4 + 8x^2 + 16 = x^4 + 8x^2 + 16$$

$$x^4 + 8x^2 + 16 = x^4 + 8x^2 + 16$$

$$x^4 + 8x^2 + 16 = x^4 + 8x^2 + 16$$

$$x^4 + 8x^2 + 16 = x^4 + 8x^2 + 16$$

$$x^4 + 8x^2 + 16 = x^4 + 8x^2 + 16$$

$$x^4 + 8x^2 + 16 = x^4 + 8x^2 + 16$$

F. R. Crawford.

$$\frac{1}{2} a^2 \int \cos 2\theta \, d\theta$$

$$\frac{1}{2} a^2 \int \cos 2\theta \, d\theta = \frac{1}{4} a^2 \sin 2\theta$$

$$= \frac{1}{4} a^2$$

$$= \frac{1}{4} a^2 + 2 \log \frac{2}{\sqrt{3}} - 1 \log \frac{2}{\sqrt{3}}$$

$$= \frac{1}{4} a^2 + 2 \log \frac{2}{\sqrt{3}}$$

$$a = 0, \theta = \pi$$

$$\frac{1}{4} a^2 \sin 2\theta = 0$$

$$a = 0, \theta = \pi$$

$$\frac{1}{4} a^2 \sin 2\theta + 2 \log \frac{2}{\sqrt{3}}$$

$$\frac{2 \log \frac{2}{\sqrt{3}}}{2} = \log \frac{2}{\sqrt{3}}$$

I hereby certify that I have neither given nor received any aid on this exam. F. R. Crawford.

$$y^2 = \frac{x^2(a+x)}{a-x}$$

$$x = x' - a$$

$$y^2 = \frac{(x-a)^2(x)}{2a-x}$$

$$2ay^2 - xy^2 = (x^2 - 2ax + a^2)x$$

$$2ay^2 - xy^2 = x^3 - 2ax^2 + a^2x$$

~~$$2a(x^2 + y^2) = x^3 - 2ax^2 + a^2x$$~~

$$2a(x^2 + y^2) = x^3 + xy^2 + a^2x$$

$$x = r \cos \varphi \quad y = r \sin \varphi$$

$$2a(r^2 \cos^2 \varphi + r^2 \sin^2 \varphi) = r^3 \cos^3 \varphi + r^3 \cos \varphi \sin^2 \varphi + a^2 r \cos \varphi$$

$$2ar^2 = r^3 \cos^3 \varphi + r^3 \cos \varphi \sin^2 \varphi + a^2 r \cos \varphi$$

$$2ar = r^2 \cos^3 \varphi + r^2 \cos \varphi \sin^2 \varphi + a \cos \varphi$$

$$2ar = r^2 \cos \varphi (1) + a \cos \varphi$$

$$2ar \sin \varphi = r^2 \sin^3 \varphi + a \sin \varphi$$

$$r^2 \cos^3 \varphi - 2ar \cos \varphi + a^2 = a^2 (1 - \cos^3 \varphi)$$

$$r \cos \varphi - a = a \sin^3 \varphi$$

$$r \cos \varphi = a \pm a \sin^3 \varphi$$

$$r = \frac{a}{\cos \varphi} \pm \frac{a \sin^3 \varphi}{\cos \varphi}$$

$$r = a (\sec \varphi \pm \tan^3 \varphi)$$