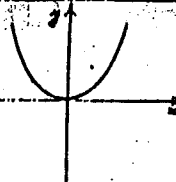
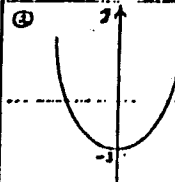
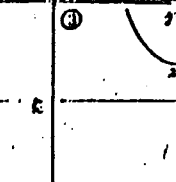
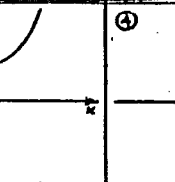
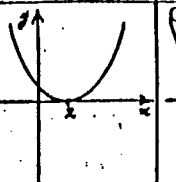
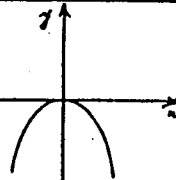
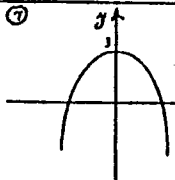
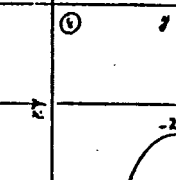
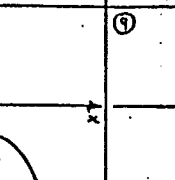
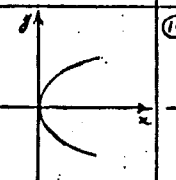
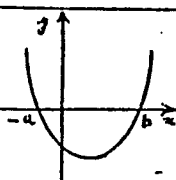
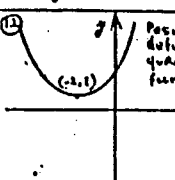
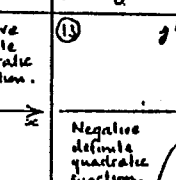
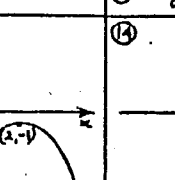
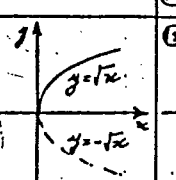
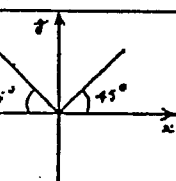
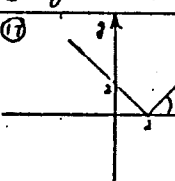
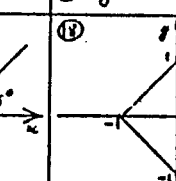
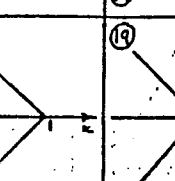
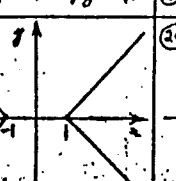
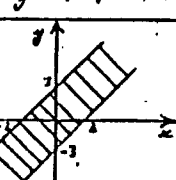
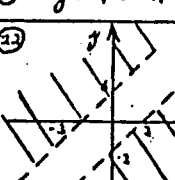
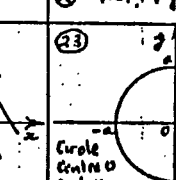
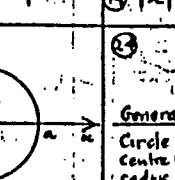
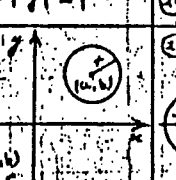
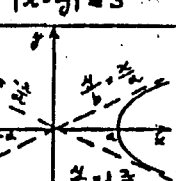
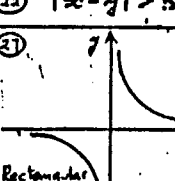
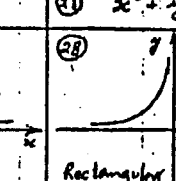
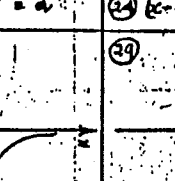
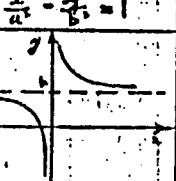
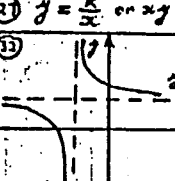
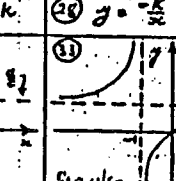
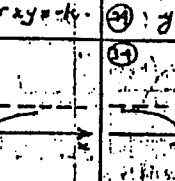


WHAT SKETCH IS THAT?

A compendium of graph sketches by A.J. WALTER.

① 	② 	③ 	④ 	⑤ 
⑥ $y = kx^2$	⑦ $y = kx^2 - 3$	⑧ $y = kx^2 + 2$	⑨ $y = k(x-2)^2$	⑩ $y = k(x+2)^2$
⑪ 	⑫ 	⑬ 	⑭ 	⑮ 
⑯ $y = -kx^2$	⑰ $y = -kx^2 + 3$	⑱ $y = -kx^2 - 2$	⑲ $y^2 = kx$	⑲ $y^2 = -kx$
⑲ 	⑳ 	㉑ 	㉒ 	㉓ 
㉒ $y = k(x+a)(x-b)$	㉒ $y = k(x+2)^2 + 1$	㉓ $y = -k(x-2)^2 - 1$	㉒ $y = \sqrt{x}, y = -\sqrt{x}$	㉓ $y = \sqrt{2-x}$
㉔ 	㉕ 	㉖ 	㉗ 	㉘ 
㉔ $y = x $	㉕ $y = x-2 $	㉖ $ x + y = 1$	㉗ $ x - y = 1$	㉘ $ y - x = 1$
㉙ 	㉚ 	㉛ 	㉜ 	㉝ 
㉙ $ x-y \leq 3$	㉚ $ x-y \geq 3$	㉛ Circle Centre $(0,0)$ radius a	㉜ General Circle Centre (a,b) radius r	㉝ Ellipse
㉞ 	㉟ 	㊱ 	㊲ 	㊳ $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$
㉞ Hyperbola Asymptotes $\frac{y}{b} = \pm \frac{x}{a}$	㉟ Rectangular Hyperbola	㊱ $x^2 + y^2 = a^2$	㊲ $(x-a)^2 + (y-b)^2 = r^2$	㊳ $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$
㊴ $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$	㊵ $y = \frac{k}{x}$ or $xy = k$	㊶ $y = -\frac{k}{x}$ or $xy = -k$	㊷ $y = \frac{k}{x-a}$	㊸ $y - b = \frac{k}{x-a}$
㊴ $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$	㊵ $y = \frac{k}{x}$ or $xy = k$	㊶ $y = -\frac{k}{x}$ or $xy = -k$	㊷ $y = \frac{k}{x-a}$	㊸ $y - b = \frac{k}{x-a}$
㊹ 	㊺ 	㊻ 	㊼ 	㊽ $y = \frac{x+1}{x} = 1 + \frac{1}{x}$
㊹ $y = b + \frac{k}{x}$	㊺ $y = \frac{ax+b}{cx+d}$ CASE 1 See No. ㉛	㊻ $y = \frac{x}{x+1} = 1 - \frac{1}{x+1}$	㊼ $y = \frac{x+1}{x+1} = 1 + \frac{1}{x+1}$	㊽ $y = \frac{x+1}{x} = 1 + \frac{1}{x}$

Ⓐ PARABOLAS, ABSOLUTE VALUE SKETCHES WITH STRAIGHT LINES, CIRCLES, ELLIPSE, AND HYPERBOLAE.

WHAT SKETCH IS THAT?

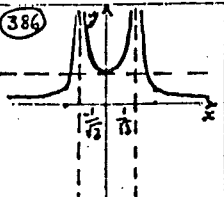
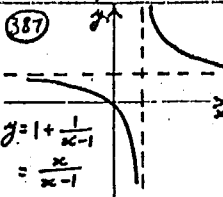
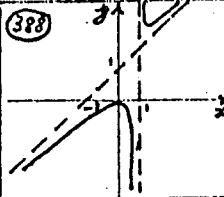
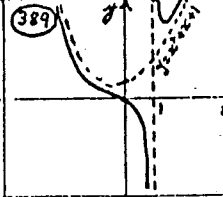
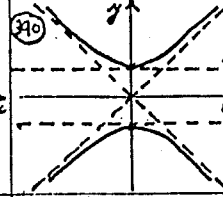
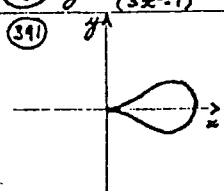
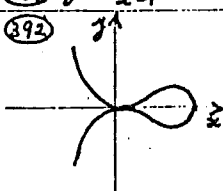
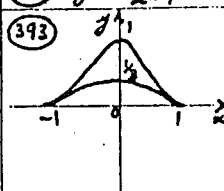
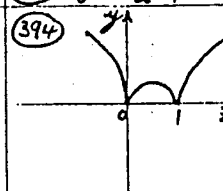
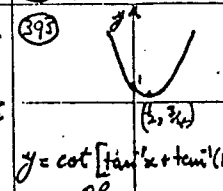
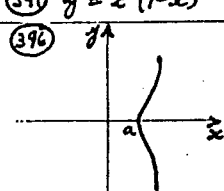
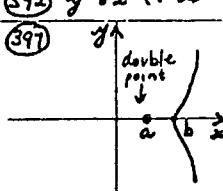
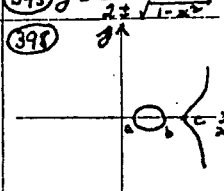
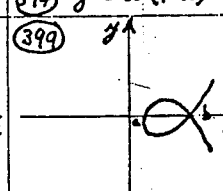
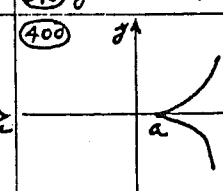
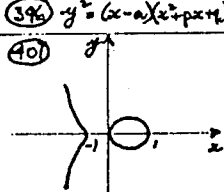
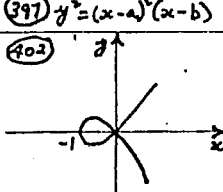
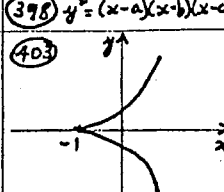
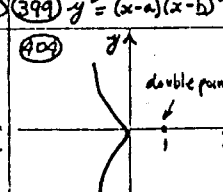
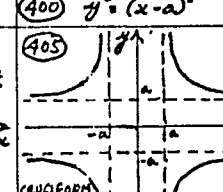
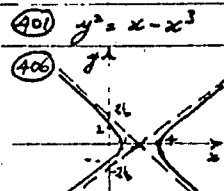
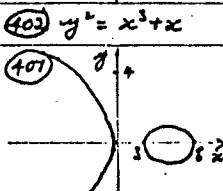
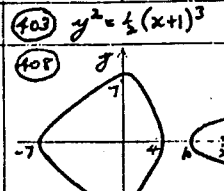
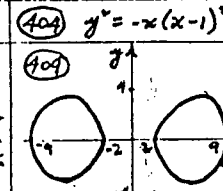
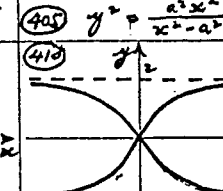
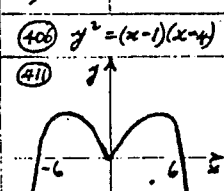
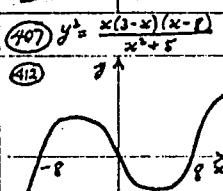
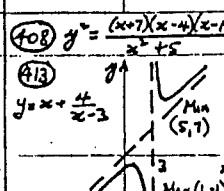
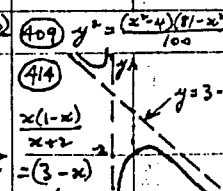
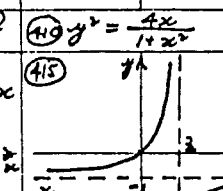
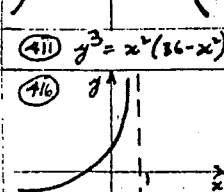
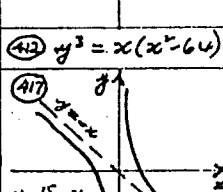
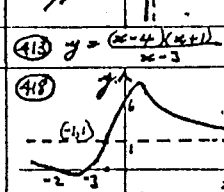
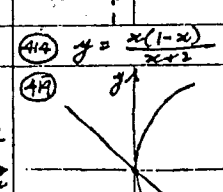
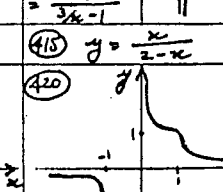
A compendium of graph sketches by A.J. WALTER.

<p>316</p>	<p>317</p>	<p>318</p>	<p>319</p>	<p>320</p>
<p>316</p> $y = \frac{x(x-1)}{(x-3)(x+1)}$	<p>317</p> $y = \frac{-3(x-2)}{(x-1)^2(x+3)}$	<p>318</p> $y = \frac{x^2}{x^2-1}$	<p>319</p> $y = \frac{(x-2)(x+1)}{2(x-3)}$	<p>320</p> $y = (x+1)(x-2)(x^2+1)$
<p>321</p>	<p>322</p>	<p>323</p>	<p>324</p>	<p>325</p>
<p>321</p> $y = \frac{x+1}{2x+3}$	<p>322</p> $y = \frac{x}{2-x}$	<p>323</p> $y = \frac{x}{x-1}$	<p>324</p> $y = \frac{(x-1)(x-3)}{(x-2)(x-4)}$	<p>325</p> $y = \frac{(x-1)(x-2)}{(x-3)(x-4)}$
<p>326</p>	<p>327</p>	<p>328</p>	<p>329</p>	<p>330</p>
<p>326</p> $y = \frac{(x-3)(x-4)}{(x-1)(x-2)}$	<p>327</p> $y = \frac{(x-1)(x-4)}{(x-2)(x-3)}$	<p>328</p> $y = \frac{2x^2-3x+1}{x^2+1}$	<p>329</p> $y = \frac{x^3+x^2+5}{2x^2-5x+2}$	<p>330</p> $y = \frac{(x-3)(x+1)}{(x-1)^2}$
<p>331</p>	<p>332</p>	<p>333</p>	<p>334</p>	<p>335</p>
<p>331</p> $y = \frac{3x^2+10x+7}{x^2+2x+2}$	<p>332</p> $y = x^2-32x+48$	<p>333</p> $y^2 = \frac{2x^2}{(x-1)(x-2)}$	<p>334</p> $y^2 = \frac{a^2x}{(x-a)}$	<p>335</p> $y^2 = x^2 \frac{x+a}{x-a}$
<p>336</p>	<p>337</p>	<p>338</p>	<p>339</p>	<p>340</p>
<p>336</p> $x(y-x)^2 = a^2y$	<p>337</p> $x(y-x)^2 = ay^2$	<p>338</p> $x^3+y^3 = a^2x$	<p>339</p> $x^3+y^3 = 3ax^2$	<p>340</p> $y(y^2-1) = x(x^2-4)$
<p>341</p>	<p>342</p>	<p>343</p>	<p>344</p>	<p>345</p>
<p>341</p> $x^4+2y^3=3xy^2$	<p>342</p> $ax(y-x)^2 = y^4$	<p>343</p> $y(a^2x+b^2y) = x^4$	<p>344</p> $(3x-2y)^2 = 3x^2y+y^4$	<p>345</p> $y^2 = x^2(x+1)$
<p>346</p>	<p>347</p>	<p>348</p>	<p>349</p>	<p>350</p>
<p>346</p> $y = \tan^{-1} \frac{1}{x-a}$	<p>347</p> $y = \tan^{-1} \frac{1+x}{1-x}$	<p>348</p> $y = x \sin x$	<p>349</p> $y = \sin^{-1}(\sin x)$	<p>350</p> $\sin(x+y) = 0$

② FURTHER RATIONAL FUNCTIONS, POLYNOMIALS & FUNCTIONS WHERE y CANNOT BE MADE THE SUBJECT, PLUS MISCELLANEOUS TRIG FUNCTIONS.

WHAT SKETCH IS THAT?

A compendium of graph sketches by A.J. WALTER.

<p>386 </p>	<p>387 $y = 1 + \frac{1}{x-1}$ $= \frac{x}{x-1}$ </p>	<p>388 </p>	<p>389 </p>	<p>390 </p>
<p>386 $y = \frac{1}{(3x-1)^2}$</p>	<p>387 $y = \frac{x}{x-1}$</p>	<p>388 $y = \frac{x^2}{x-1}$</p>	<p>389 $y = \frac{x^2}{x-1}$</p>	<p>390 $y^2 = 1+x^2$</p>
<p>391 </p>	<p>392 </p>	<p>393 </p>	<p>394 </p>	<p>395 </p> <p>$y = \cot[\tan^{-1}x + \tan^{-1}(1-x)]$ OR</p>
<p>391 $y^2 = x^2(1-x)$</p>	<p>392 $y^2 = x^2(1-x)$</p>	<p>393 $y = \frac{1-x^2}{2 \pm \sqrt{1-x^2}}$</p>	<p>394 $y^2 = x^2(1-x)^2$</p>	<p>395 $y = x^2 - x + 1$</p>
<p>396 </p>	<p>397 </p> <p>double point</p>	<p>398 </p>	<p>399 </p>	<p>400 </p>
<p>396 $y^2 = (x-a)(x^2+px+q)$</p>	<p>397 $y^2 = (x-a)^2(x-b)$</p>	<p>398 $y^2 = (x-a)(x-b)(x-c)$</p>	<p>399 $y^2 = (x-a)(x-b)^2$</p>	<p>400 $y^2 = (x-a)^3$</p>
<p>401 </p>	<p>402 </p>	<p>403 </p>	<p>404 </p> <p>double point</p>	<p>405 </p> <p>CAUSIFORM CURVE</p>
<p>401 $y^2 = x - x^3$</p>	<p>403 $y^2 = x^3 + x$</p>	<p>403 $y^2 = \frac{1}{2}(x+1)^3$</p>	<p>404 $y^2 = -x(x-1)^2$</p>	<p>405 $y^2 = \frac{x^2 x^2}{x^2 - a^2}$</p>
<p>406 </p>	<p>407 </p>	<p>408 </p>	<p>409 </p>	<p>410 </p>
<p>406 $y^2 = (x-1)(x-4)$</p>	<p>407 $y^2 = \frac{x(3-x)(x-8)}{x^2+5}$</p>	<p>408 $y^2 = \frac{(x+7)(x-4)(x-10)}{x^2+5}$</p>	<p>409 $y^2 = \frac{(x-4)(11-x^2)}{100}$</p>	<p>410 $y^2 = \frac{4x}{1+x^2}$</p>
<p>411 </p>	<p>412 </p>	<p>413 </p> <p>$y = x + \frac{4}{x-3}$</p> <p>Max (5,7) Min (1,-1)</p>	<p>414 </p> <p>$y = 3-x$</p> <p>$\frac{x(1-x)}{x+2} = (3-x)$</p> <p>$\frac{6}{x+2}$</p>	<p>415 </p> <p>$\frac{x}{3-x} = \frac{4}{3x-1}$</p>
<p>411 $y^2 = x^2(36-x^2)$</p>	<p>412 $y^2 = x(x^2-64)$</p>	<p>413 $y = \frac{(x-4)(x+1)}{x-3}$</p>	<p>414 $y = \frac{x(1-x)}{x+2}$</p>	<p>415 $y = \frac{x}{2-x}$</p>
<p>416 </p> <p>$y = \frac{(x+1)}{2-(x+1)}$ See (415)</p>	<p>417 </p> <p>$y = \frac{15-x}{x}$</p>	<p>418 </p> <p>$y = 1 + \frac{5(x+1)}{x^2+1}$ OR</p>	<p>419 </p>	<p>420 </p>
<p>416 $y = \frac{1+x}{1-x}$</p>	<p>417 $y = \frac{15-x^2}{x}$</p>	<p>418 $y = \frac{x^2+5x+6}{x^2+1}$</p>	<p>419 $y^3 = 2x^2 + 3xy$</p>	<p>420 $x^2y + xy^2 = 2$</p>

② FURTHER CURVES WITH ASYMPTOTES, AND WITH VARIOUS POWERS OF y AS THE SUBJECT.

WHAT SKETCH IS THAT?
A compendium of graph sketches by A.J. WALTER.

(1)	(2)	(3)	(4)	(5)
(6) $y = x^2 + kx^3$	(7) $y = x^3 + kx^2$	(8) $y = x^2 + kx^3$	(9) $y = x^3(x+a)$	(10) $y = (x^2 - kx)^2$
(11)	(12)	(13) $y = k(x-a)(x-b)(x-c)$	(14) $y = k(x-a)(x-b)(x-c)^2$	(15) $y = (x+a)^4$
(16)	(17) $y = -k(x-a)(x-b)(x-c)$	(18) $y = k(x-a)(x^2 + b^2)$	(19) $y = -k(x-a)(x^2 + b^2)$	(20) $y = k(x-a)(x-b)^2$
(21)	(22)	(23)	(24) $y = \log_e x$ or $x = e^y$	(25) $y = \log_e \sin x$
(26) $y = 2^{1/x}$	(27) $y = e^{-x}$ $y = e^x$	(28) $y = e^{x-a}$	(29) $y = \log_e x$ or $x = e^y$	(30) $y = \log_e \sin x$
(31) $y = x \log_e x$	(32) $y = \frac{1}{x} \log_e x$	(33) $y = \frac{1}{2} (\log_e x)^2 + \frac{3}{2}$	(34) $y = \frac{x}{\log_e x}$	(35) $y = -x^2 \log_e x$
(36)	(37)	(38)	(39)	(40)
(41) $y = (x-1) \log_e (x-1)$	(42) $y = \log_e x $	(43) $y = \log_e (1+x^2)$	(44) $y = \frac{\log_e x}{x^2}$	(45) $y = x^2 \log_e x$
(46)	(47)	(48)	(49)	(50) $y = x^2 \log_e x$
(51) $y = x e^{-x}$	(52) $y = x e^x$	(53) $y = e^{-kx^2}$	(54) $y = x^2 e^{-x}$	(55) $y = d, a^x, -d, -d^x$
(56)	(57)	(58)	(59) $y = x^2 e^{-x}$	(60) $y = d, a^x, -d, -d^x$

© POLYNOMIALS & RELATED SKETCHES PLUS LOGARITHMIC AND EXPONENTIAL SKETCHES.

WHAT SKETCH IS THAT?

A compendium of graph sketches by A. J. WALTER.

36 $y = \frac{-a}{bx+c}$	37 $y = \frac{k}{x^2}$	38 $y = \frac{k}{(x-a)^2}$	39 $y = \frac{k}{(x+a)^2}$	40 $y^2 = \frac{k^2}{x^2}$
41 $y = \frac{k}{(x+a)(x-b)}$	42 $y = \frac{kx}{(x+a)(x-b)}$	43 $y = \frac{-kx}{(x+a)(x-b)}$	44 $y = \frac{k}{(x+a)(x-b)(x-c)}$	45 $y = \frac{kx}{(x+a)(x-b)(x-c)}$
46 $y = x + \frac{1}{x} = \frac{x^2+1}{x}$	47 $y = x - \frac{1}{x} = \frac{x^2-1}{x}$	48 $y = \frac{(x-3)}{(x+1)(x-2)}$	49 $y^2 = \frac{1}{x}$	50 $y = \frac{1}{ x }$
51 $y = \frac{x^3}{x^2+1} = x - \frac{1}{x+1}$	52 $y = \frac{1-x^2}{1+x^2}$	53 $y = \frac{x^2-1}{x^2+1}$	54 $y = \frac{kx}{x^2+a^2}$	55 $y = \frac{k}{x^2+a^2}$
56 $y = \frac{k}{x^2+a^2}$	57 $y = \frac{x^2-1}{x^2+1}$	58 $y = \frac{x^2-1}{x^2-2x-2}$	59 $y = \frac{1}{(x+1)(x+1)}$	60 $y = \frac{x^2}{x^2+1}$
61 $y^2 = \frac{k^2}{x^2+a^2}$	62 $y = \frac{x^2-x+1}{x^2+x+1}$	63 $y = \frac{x^2+1}{x^2-2x-2}$	64 $y^2 = x^3 + y^2 + kx^2$	65 $y = x^{\frac{1}{2}}$
66 $y = x^2 - \frac{1}{x}$	67 $y = (x^2-a^2)^2$	68 $y = x^2(x^2-a^2)$	69 $y^2 = x^2 + y^2 + kx^2$	70 $y = x^{\frac{2}{3}}$
71 $y^2 = x(x-2)^2$	72 $y = \sqrt{x^2(2-x)}$	73 $y^2 = x^2(4-x^2)$	74 $y^2 = x^2(a-x)$	75 $y^2 = x(x^2-a^2)$

(A) RATIONAL FUNCTIONS, CURVES WITH LOOPS, CUSPS & DOUBLE POINTS.

CURVES WITH y^2 AS SUBJECT.