Partial Fraction

| | ,t's | gc | b b | ac | k | to | a | lge | bra | a f | or | a | ma | ome | ent | . H | low | d | 0 | you | C | oml | Dine | e fi | rac | tior | 15 | | |
|-----------------------|---|--|--|-----------------------------|-------------------------------------|---|---|-------------------------|---|--|---|------------------------------|------------------------------|---|--|---|--------------------------------|-----------------------------|-------------------------------------|---------------------------------|---------------------|-----------------|---|---------|-----|------|-----|-----|----|
| wi | th | diff | reve | ent | d | eno | mir | natc | ors | ? | | | | | | | | | | | | | | | | | | | |
| | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1 | - | | 12 | - | | | | | | | | | | | | | | | | | | | | | | | |
| | ~ | -3 | | | 72 | | | | | | | | | | | | | | | | | | | | | | | | |
| | 11 | | 2) | | 4 | | 2) | | | .11 · | | . \ | | | | | . (| | | • | | | | | | | | | |
| | <u> </u> | $\frac{x+}{2}$ | <u>()</u> 2 | \ | <u> </u> | 2 | <u>)</u> 2) | | mi La | | t bli | | PY m | m | 155 | do Mir |) T | | | | - | | | | | | | | |
| | (X- | 5 10 | 717 |) | (XT | 2)() | (-) | | JO | -9 | 51 | | | | | ue | | | | | | | | | | | | | |
| | 4 | x t | 8 | | X | (-3 | | | | | | | | | | | | | | | | | | | | | | | |
| | (x- | 3)() | x+2) |) | (Xł | -2)(| x-3) | 5 | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 4. | x+8 | <u>- x</u> | | 3 | | | | | | | | | | | | | | | | | | | | | | | | |
| | (| x-3) |)(Xł | -2) | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | <u>3</u> | Xt | <u> </u> | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | (X- | 3)(X | (+2) |) | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1: | ka | 200 | 210.1 | ir | | 2 | 0.40 | | ~ ~ J | | | | | 4 | ha | | | | | | h | | | | .7 | | | | |
| | re | 1116 | AVIY | | | пте | 910 | 1 5 | ect | 101 | 15, | WE | , a: | SK. | no | US I | ca | | ue_ | 90 | D | | | AY CI; | S. | | | | |
| i.e | | 3x (x+2) | (†) (X+ | -3) | = (| A (x+2) | 5 + | <u> </u> | <u>,</u> 5) | w | he | re | A | and | B | ar | e | exd | res | sio | ns | th | at | ma | | con | tai | 0 X | ζ. |
| | | | | | | | | | | | | | | | | | | 1 | | T | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Pa | rti | al | Fra | cti | on | De | ૨૦૦ | m | >05 | siti | on | | | | | | | | | | | | | | | | | | |
| Pa | rti | al | Fra | <u>cti</u> | on | De | ૨૦૦ | <u>m</u> r | >05 | siti | on | | | | | | | | | | | | | | | | | | |
| Pa Th | rti Ne | al l eae | <u>Fra</u> sies | <u>cti</u> st | on wo | De Ny t | 2 <u>0</u> 70 | <u>eom</u> p |) <u>os</u> arn | siti H | on Nis | Ŷ | net | ho | d i | is | to | 50 | 20 | it | d | one | 2. | | | | | | |
| Pa Th | rti 1e | al l eas | Fra | <u>cti</u> st | <u>on</u> | De ny t | 2005 | <u>ec</u> | > <u>os</u> | <u>siti</u> tt | on nis | Ŵ | net | ho | d i | 13 | to | 50 | 20 | it | d | one | | | | | | | |
| <u>Pa</u> Tr 1. | rti 1e 5: | al eae x-4 | Fra sies | <u>cti</u> | on Wo Fi | De ny t | ro | lec lec | 205 Arn | siti tr | on nis at | rv Hn | net e | ho | d i ner | is ato | to | se ha | 2e 5 | it | d er | one de | e. | 20 | | | | | |
| <u>Pa</u> Tr 1. | rti 1e $\frac{5}{x^2}$ | <u>al</u> eae x-4 -x- | Fra sies 1 2 | <u>cti</u> st | on Wo Fi Hr | De ny t rst | ro cr d | lec lec lecl | > <u>os</u> arn k omi | siti th the | on nis at | rv Hn , i | net e | ho nun not | d i nev r d | is ato | to | se ha | 2e 5 | it ow | d | one de | z. | 3e | | | | | |
| <u>Pa</u> Tr 1. | rti e <u>5</u> x ² | <u>al</u> eae <u>x-4</u> -x- | Fra sies 1 2 | <u>cti</u> | on Wo Fi H | De ny t rst nan | ro cr d | evic | > <u>os</u> arn k omi | siti th the | on nis at tor | w Hh , i | e f | ho num not | d i nev d | is ato | to | 50 ha | 2e 5 | it ow sior | d | one de | z. | 20 | | | | | |
| <u>Pa</u> Tr 1. | $\frac{5}{x^2}$ | <u>al</u> eae x-4 -x- x-4 | Fra 5ies 1 2 | ctin st | 00 Fi H 5x -7) | De vst an -4 | ro ch d | evic | > <u>>os</u> arn k Fa | siti the the nat | on nis at tor | w Hn , i Hn | e f e | hor nun not | d i nev d | is ato o la | to | se ha d | 2 e 5 | it ow sior | d | one | 2. .gre | 20 | | | | | |
| Pa Tr 1. | $\frac{5}{x^2}$ | <u>al</u> eae x-4 -x- x-4 | Fra sies 1 2 2 | cti st | on Fi H 5x -2) | De rst 1an -4 | 2 c d | ence | 2005 Arn k Fa | siti Hu Hu cto | on nis at tor | w th , i th | e f e | hon nun not | d nev d | is ato o la | to | se ha | 2 e 5 | it ow sior | d | one | 2. 2. 2. 2. 2. 2. 2. 2. 2. 2. 2. 2. 2. 2 | 3.C | | | | | |
| <u>Pa</u> Tr 1. | $\frac{5}{x^2}$ | al eae x-4 -x- x-4 -x- | <u>Fra</u> sies 1 2 - = 2 | cti st (x | on Liso Fi Hr 5x -z) | De rst 1an -4 (xt | 200 70 ctr d | ence R | > <u>os</u> arn k Fa | siti the the cte | on nis at tor | th ; i th | e f e | hon num not | d i nev d to | is ato o la m | to pr png | ha d | s ivis ior | it ow sion | d | one | e. gre | se F | act | | | | |
| <u>Pa</u> Tr 1. | $\frac{5}{x^2}$ | al eae x-4 -x- x-4 -x- 5x-4 5x-4 | Fra 5ies 1 2 - = 2 4 4 x+1) | <u>cti</u> st (x | on Fi Hr 5x -z) | De rst 1am -4 (xt A -2) | 2000 70 ch d | ence B (X+ | > <u>os</u> arn k fa | siti the the ctc | on nis at tor | m th ; i th rite | e f e cv | hor nun not | d nev d to art | is ato o la m ia) | to ir ong fr all e | ha d | s ivis ior | it ow sior | d er n n | one | z. .gre | se | act | | | | |
| Pa Tr 1. | $\frac{5}{x^2}$ | <u>al</u> eae <u>x-4</u> -x- <u>x-4</u> <u>5x-4</u> <u>5x-4</u> | Fra 5ies 1 2 2 4 4 x+1) | <u>cti</u> st (x | 0 | De rst rst 1am -4 (xt A -2) | 200 70 ctr d | evice B | > <u>os</u> arn k fo 1) | siti the main | on his at tor w (s | th ; i th rite | e f e cv | ho nun not | d nev d to art | is ato o k m ia) | to ong fr | ha d | s ivis | it ow sion | d er n ns) | one | e. gre | :e | act | 0Y | | | |
| Pa Tr 1. | $\frac{5}{x^2}$ | al eae x - 4 - x - x - 4 - x - 5x - 4 - 2)ly | Fra 5ies 1 2 2 4 4 (x+1) 4 | <u>cti</u> st (x = | on Fi Hy 5x -z) Ix | De rst rst 1am -4 (xt A -2) (xt | 2 CC TO C C C C C C C C C C | evice B (x+ | 2005 Arn Fo T) B | siti the the cte | on his at tor w (s | th ; i th rite | e f cv m | num not bot nor | d nev d to art f f | is ato o la m ia) | to ong fr all e | se ha d act | s ivis ior | it ow sion for sion | d er n ns) | one de eo | e. gre ach | ee f | ato | | | | |
| Pa Tr 1. | $\frac{5}{x^2}$ $\frac{5}{x^2}$ $\frac{1}{x^2}$ | al eae x - 4 - x - x - 4 - x - 5x - - 2)(x | Fra 5ies 2 | <u>cti</u> st (x = | on Fi Hy 5x -z) Ix | De rst rst - 4 (xt -2) (xt | 2 CC TO C C C C C C C C C C C C C | <u>evic</u> B (x+ | > <u>os</u> arn c fo 1) B (x- | siti the the cte (x · | on nis at tor v (s (s | m th ; i th rite | e f e cv m sc | num not boot nor ulti | d nev d Ho art f f gle d | is ato o la m ia) or a is o | to ong fr all e | ha d act exp co | ee s ivis ior an: vs | it ow sion sion | d er n ns) | one de eo | e. gre ach | e f | act | | | | |
| Pa Tr 1. | $\frac{5}{x^2}$ | a eae x - 4 -x | Fra 5ies 1 2 - - - - - - - - - - - - - | ctin st (x = | on Fi Hy 5x -z) Ix | De rst rst an - 4 (xt -2) (xt -2) | 2 CC TO C C C C C C C C C C C C C | evice B (x+ | >os arn Fo T) B (x- | siti the the ctc (x · - z)(| on nis at tor v (e (e | m Hn ; i Hn rite | e f e cv | num not boot nor ulti it | d nev d Ho art f f gle d | is ato o la m ia) or a is o | to ong fr all e | ha d act ea | ee s ivia ior an: rs | it ow sion for sion | d er n s) | one | e. green | se f | ato | | | | |

| | me | .th | od | 1: | 100 | ots | b | | | | | | | | | me | eth | od | 2: | lin | ear | r d | alge | ebr | <u>a</u> | | | | |
|----------|------------------|---------------------------|-------------------|------------|----------|----------|-----------|-------------|------|------|------|-------|-------------------|------|-----|------------------|---------|------------|--|-----------|-----|------|------|-----|----------|----------|------|-----|-------------|
| | 0 | | | | | | | • | | | | | | | | | | - \- | | | | | | | | | | | |
| | Y lu | lg r | | 100 | TS (| 10 | | <u>Cier</u> | | 0 | te | ~m. | 5 | | | m | | pie - A | . <u>0</u> | λτ - Δ | r | 2. | | 7 R | | | | | |
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| | ×- | <u>.</u> | 6 | 12 | - | 4 | | 2 -11 | | R | 12. | 21 | | | | - 4 | | Δ. | -7 | R | | | | | | | | | |
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| | | | | | | 2 = | Δ | | | | | | | | | 50 | ve. | 51 | 1 <te< td=""><td>m</td><td>of</td><td>li</td><td>ne</td><td>x</td><td>e.n</td><td>uat</td><td>ior</td><td>เร</td><td></td></te<> | m | of | li | ne | x | e.n | uat | ior | เร | |
| | | | | | | 6 | | | | | | | | | | 5 | = A | +P | | =7 | Α | = 5 | - B | | 9 | => | Δ- | 5- | 3 |
| | | 5 | x- | 4 | | 2 | | | 3 | | | | | | | -4 : | = A | -2 | B | | -4 | : (9 | - B |)-2 | B | | A : | : 2 | |
| | | x ² . | - X - | 2 | - | χ. | -2 | + - | (+1 | | | | | | | 501 | ve f | or | Ā | | -4 | = 5 | -31 | B | | | | | |
| | | | | | | | | | | | | | | | | in | ea. | 1 a | nd | | -9 | | 3B | | | | | | |
| | Wa | Irn | ina | : th | is 1 | me | tho | d or | nly | w | ork | 5 | | | | Dlu | a ir | to | eq.2 | | 3 | = P | > | | | | | | |
| | wh | en | VO | u ł | nav | e r | 10 | rer | bea | ted | fo | cto | s | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | _5 | x- | 4 | _ | 2 | | | 3 | | | | | | |
| | | | | | | | | | | | | | | | | χ ² . | - X - | 2 | | χ- | 2 | X | (+1 | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2. | | χ^2 | -15 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | (Xł | 3) ² | (x ²) | -3) | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | A | | | B | |
| (X) | 13) ² | h | os | an | ex | POI | nen | to | f 7 | 25 | o i | + : | ipli ¹ | 5 | int | <u>ہ</u> | two | o p | art | ial | fr | act | ior | 1 | Xł | 3) | ٤ | LXT | 1) <u>r</u> |
| (x² | +3) | is | a | qu | lad | rat | ic. | 50 | it. | ne | eed | S | a | Pa | rti | al | fra | cti | on | X | +3 | - | | | | | | | |
| | | 2. | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | χ-+ 7. | 15 | | = | <u> </u> | | + | | 5 | + | | +D | | | | | | | | | | | | | | | | |
| | (Xł | 3)`(| x ` † | 3) | | Xt | 3 | | (X- | 3) | | (X) | TO | | | | | | | | | | | | | | | | |
| | 2. | | | | | 2. | | | 2. | - 1 | | | | | | 2 | | | | | | | | | | | | | |
| | Xł | ·15 | = A | (X+ | 3)(| X-F | <u>3)</u> | + 12 | (x-+ | 3) | + (| Сх | +D) | (X1 | -3) | | | | | | | | | | | | | | |
| | | 11. | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | me | .tno | d. | L: A | 00 | ts | • | | | | | | | | | | | | | | | | | | | | | | |
| | the | хе \2. | is | 0 | YOC | + 6 | 14 | X = • | -3 | | | . 2. | _ | | | | | - >7 | | | | | | | | | | | |
| | (-3 | 1 - (ا ـ ا | 15 15 | = A - ^ | (-3 | +3 | R R | -3)4 | r3) | + 13 | ((-' | 3)-{ | 3) | + ((| cx+ | ונס | -31 | -3)` | | | | | | | | | | | |
| | -1 | T | 24 | | T Z R | 14 | | | | | | | | | | | | | | | | | | | | | | | |
| | | | 2 | = B | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| the | | ant | 1004 | th | d | lai | 11 - | | | rk | 06 | (436 | | an'1 | | 07 | do | | to | • | Icl | | P | 2 | | R | . C. | | |
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| <u> </u> | | | | | | | | - | | | | | | | | | | | | | | | | | | | | | |

| method z: | linear alael | ora | | | | |
|--------------------------------------|------------------|----------------------|-----------------------------|-------------------|-------------------|-----|
| multiple or | .+: | | | | | |
| x2 LIG - 01 -3 | 1 2 1 2 2 L Q | LRIVEL | 2) + (x x2+1 | -+a) + D(v2+ | (m+a) | |
| | 1 2 A v 1 2 A v2 | LOALR | vZLZR + rv | 3 | DYZ +1-DY +9D | |
| $y^{2}+15 = Ay^{3}$ | LC x3 L 20 v2 | + Byz LIN | ~ 2 F D ~ 2 F. | SAY LACY LIND | LAN + 2B LAD | |
| | | | | | | |
| olua in h- | 7 Eram ma | Hood 1: | | | | |
| $v^2 Lic = A v^3$ | LC 13 L 20.2 | 1722 LI | CV2 10V2 1 | ZAV LOCY LLS | Y LAN LIDLAD | |
| | | | | | | |
| se parate t | the powers | • | | | | |
| v ³ : 0 ³ -0 v | 31 (-3 | | | | | |
| $y^2: y^2 = 2$ | A-2 L 7 -2 L1 | C-2 1 D. | ,2 | | | |
| | SAY LOCX + 61 | | | | | |
| | 15 = 910 + 10 | +90 | | | | |
| CONSTANTS. | | | | | | |
| Simplify: | | | | | | |
| O = A + C | | | | | | |
| -1 = 3A + 60 | C+D | | | | | |
| 0 = 3A + 9C | +60 | | | | | |
| I = A + D | | | | | | |
| | | | | | | |
| subtract ea | 4 from eas | 2 | | | | |
| O = A + C | | | | | | |
| $-2 = 2 \Delta + 100$ | c. | | | | | |
| 0=3A+9C | tUD | | | | | |
| I = A + D | | | | | | |
| | | | | | | |
| Use row 3 | to solve | | | | | |
| c = -1/2 | | | | | | |
| A= 1/2 | | | | | | |
| $D = \frac{1}{2}$ | | | | | | |
| | | | | | | |
| x ² +15 | _ Yz . | 2. | $-\frac{1}{2}x+\frac{1}{2}$ | | | |
| $(x+3)^{2}(x^{2}+3)$ | - <u>x</u> t3 | (x+3) ² T | x ² +3 | | | |
| | | | | | | |
| Key Partial Fr | action Rul | es | | | | |
| | | | | | | |
| · This method a | nh works | for prop | er fraction | s, i.e. the denor | ninator is larger | |
| · To make an | improper f | raction | Droder In | e use polynom | mial lona divisi | on. |
| · The denamin | nator is mo | de of li | near factor | s and irroduci | ble quadratics | |
| | | | | | yuuuuuus. | |

The partial fraction of an irreducible quadratic uses Ax+B in the numerator.
 If the factor has an exponent then you need multiple partial fraction, one for each exponent.

Key Denominators and their Partial Fractions

Factor in denominator Partial fraction in decomposition

| axtb | |
|-----------------------|----------------------------|
| | axtb |
| lovebon | A, Az An |
| | axtb (axtb)2 (axtb) |
| ax ² +bx+c | Ax+B |
| | Ox ² +bx+c |
| $lax^{2}+bx+c^{n}$ | AIXTBI + AZXTBZ + + ANXTBN |

| l (0 | t bx | + C | | | | _ | | | | • • | _ | | | _ | | - · · | • | TI | | | | |
|--------------|------|-----|--|--|---|---|------|----|----|-----|----|-----|-----|-----|---|-------|---|----|-----|-----|------|----|
| | | | | | | C | xx2+ | рх | +C | | ((| XX2 | łbx | +C) | • | | | | (ax | s+P | x tc |)n |
| | | | | | ľ | | | | | | | | | | | | | | | | | |

Examples:

Give the partial fraction decomposition for the following, do not solve for the coefficients:

| 1. | x² | + x | +1 | - | | A | - | _1 | 3 | - | | С | | | | | | | | |
|----|-----|------|-----|---|---|----|-----|-----|-----|---|----|------|----------------|-----|----|--|--|-----------|-----|---|
| | (x+ | 1)(X | +4) | | X | +1 | T | (X) | +4) | T | (X | +4)² | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| 2. | x | +x | +1 | | | , | 2+x | +1 | | | | | x ² | +x· | +1 | | | x^{2} t | x + | (|

| х ³ (| x-1 |)(x4 | L1) | - | x ³ (| (x-1 |)(x | ²+1)(| x21) |) - | Х ³ | (x- | 1)(; | (² +1 |) (x | +1)(| х-I) |) | χ ³ (| x-1 |) ² (: | x ² +1 |)(x | 1) |
|------------------|-----|------|-----|---|------------------|------|-----|-------|------|-----|----------------|-----|------|-------------------|------|------|------|---|------------------|-----|--------------------|-------------------|-----|----|
| | | | | | | | | | | | | | | | | | | | | | | | | |

| | - | A | B | С | _ | D |) | _ | E | | - | Fx | +G | | F | 1 |
|--|---|---|----|----|---|----------|----|---|-----|-----|---|----------------|----|---|----|----|
| | | × | X² | X3 | 1 | Χ- | -1 | - | (x- | 1)2 | - | X ² | -1 | • | X+ | -1 |

| 3. | | 10 | 0x7 | tx3 | -50 | 00 | | - | | | 100 | x7i | - χ ³ - | 1 50 | 00 | | | _ | | | 100 |)x7. | + x ³ | + 5 | 000 |) | | | |
|----|-----|-------------------|------------------|-------------------|---------|-------------------|-------|------|------|-----------------|------|------|--------------------|--------------------------|------|-------|----|---|-----|------------------|------------------|------|------------------|------|------|------|-----|-------------------|---|
| | (x² | -4) ² | (x"t | 5x ³ | t6x | [}])(Iu | -Xel) | - | (x²+ | 4) ² | (X²) | (x²+ | 5x † | b)(^µ | -χ²) | (4+ : | ײ) | - | (x² | +4) ² | (X) ² | (x+3 |)(xł | 2)(; | 2+X) | (2-: | x)(| 41-x2 |) |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | 10 | ۲ x0 | + x ³ | +50 | 00 | | | Ax | łB | | Cxt | D | , 1 | | F | | | ົ່ | | Η | | | I | - | Jx+K | , |
| | | (x² | +4) ² | (x) ² | (x+ | 2) ² (| 2-7 | :)(4 | tx²) | - | χ²ł | -4 | | (X ² fr | 1)2 | - | X | k | 2 | X | +2 | T | (X+7 |)2 | 2 | -X | Ţ. | LI+X ² |) |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

D. I. D

| D | ivi | div | Ŋ | Yo | hr | 10n | nia | ls | | | | | | | | | | | | | | | | | | | | |
|------------------------|--------------------------------|------------|-----------------|--|-------------------------------|------------------------------|-------------|----------------------|-----------------|---------------------|---|-----------------|-----------------------|----------------------|--------------------|------------------|------------|-------------------------|--------------|---------------------------|------------------------|-------------|------------|-------------|-------------|------------|-------------|-----------------------------------|
| Pro | <u>op</u> | er | Ra | atic | ona | al F | un | ctio | ons | 5 | | | | | | | | | | | | | | | | | | |
| Def | <u>rini</u> | itic | ns | • | | | | | | | | | | | | | | | | | | | | | | | | |
| A v are | rat 2 F | ior ool | al no | fu | nc ¹ ial | ior s, | is e.g | 0 2 · 3 | fur <u>4</u> | ction x+5 x-1 | $\frac{x}{3^{3}}$ | of +1 (-2 | ₩ , ` 5 | 10 3 - 1 x - 1 | for T, | m etc | q | (X) X) | w | her | e I | 001 | ħ | p() | <i>د)</i> ٥ | ind | qlx | :> |
| A r th | rati e (| ion deç | al gree | fun e c | nc [:] sf | tior the | n is be | s (oH | all om | ed `, | pr e.g | op . x | ег 5 4 | if | th [×] | e (, (x- | | 100 +3) ² | o f | H | ne | to | P is | 5 51 | ma | ller | Ħ | an |
| Ex | am | <u>ipk</u> | s٠ | Ι | den | ntif | N I | f | the | fo | ollo | wi | ng | ra | tio | na | fi | inc | tic | ons | ay | e | pro | ope | r: | | | |
| 1. | <u> </u> X ² - | 4 | deg | 3(1) | =0 | 42 = | deg | (x²-1 | 1) | 3. | <u>χ</u> ² - χ ² - | <u>\</u> 4 d | egli | (-1) | =2 / | 2= d | eg(x | -4) | 5. | $\frac{\chi^3}{(\chi^2)}$ | -1 -4) ³ | de | g(x³ | -1)= | 321 | l=de | gl (s | (^z -4) ²) |
| 2. | <u>X- </u> X ² - | 4 | degl | x-1) | =1 | 2=0 | deg(| x²-4 | 5 | 4. | <u>X³-</u> X ² - | <u>।</u> म | degl | x ³ -1 | \=3 | 42 | : = de | sg lx | ²-4) | | | | | | | | | |
| pro | ope | er: | 1, | 2, | 5 | | | | | | | | | | | | | | | | | | | | | | | |
| Lc | <u>m</u> | <u>3 [</u> | Divi | sic | <u>n</u> | | | | | | | | | | | | | | | | | | | | | | | |
| Sir in [!] | nil to | ar a | to pro | h ppe | ою 7 | w fra | e c ctic | an on | us (4 | e](+ 북 | ong), | di we | vis ca | ion an | tc us | o ti e li | arn ong | an 3 c | n i livi: | mp sio | n | per | - fi Pi | rac oly | tio no | n (mic | like als | <u>24</u> 5) |
| Exe | am | ple | <u>s:</u> | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1. | Di | vid | e | 5x³ | - X ⁸ | 4 16 | b | Ŋ | x - 4 | 4 | | | | | | | | | | | | | | | | | | |
| | X- | 4 | 5; 5; -(5 | x ² + (3 x ³ - | 19x x ² + 20 | +76 6 x ² > |) | we | ha | ve | on | e x | ir | (x | -4 |) W | e r | nee | d | 5 x ³ | 50 | s u | e | suk | stra | act | 5× | ²(x-4 |
| | | | C |) + - | 19, (19 | 2+(x^2-7 | o ·bx` | ເ ນຍ ເ | h | ne | on | e | (U | se · | nee | d | 19: | <mark>ک</mark> : | 50 | we | SL | ibh | rac | t | 19; | k(x | -4) | |
| | | | | | 0 | +7(-(7 | рх I bx | - -3 | 04) | we | h | ave | 01 | ne : | χu | ve | ne | ed | 7 | Ьx | so |) ((| e : | sub | itra | ct | 7(| •(x-4 |
| | | | | | | | 0 1 | -3 | 0 | | ເນຍ ຣັດ | h 3 | ave 10 | 01 is | ne o | X ur | we re | n | eed ain | 3 de | 10 r | wł | hict | n is | s ir | np | 055 | ible |
| | | | 1 | | 1 | | | | | | | | | 1 | | | | | | | | | | | | | | |

 $\frac{5x^{2}+19x+76}{x-4} = 5x^{2}+19x+76+\frac{310}{x-4}$