Find this quotient: $\frac{4x^3 + 7x - 9}{x + 3}$

$4x^2 - 12x + 43$

$x+3 \;\overline{)\; 4x^3 + 0x^2 + 7x - 9}$

$-4x^3 + 12x^2$

$-12x^2 + 7x$

$-(-12x^2 - 36x)$

$43x - 9$

$-(43x + 129)$

-138

answer is:
$4x^2 - 12x + 43$ R= -138

Find this Quotient.

$\frac{4x^4 + 25x^3 - x^2 - 19x + 3}{x^2 + 6x - 1} =$

$4x^2 + x - 3$

$x^2+6x-1 \;\overline{)\; 4x^4 + 25x^3 - x^2 - 19x + 3}$

$4x^4 + 24x^3 - 4x^2$

$x^3 + 3x^2 - 19x$

$x^3 + 6x^2 - x$

$-3x^2 - 18x + 3$

$-3x^2 - 18x + 3$

0

answer is:
$4x^2 + x - 3$

Find this quotient: $\frac{3x^4 + x^3 + x^2 + 2x - 10}{x^2 + 2} =$

$3x^2 + x - 5$

$x^2+0x+2 \;\overline{)\; 3x^4 + x^3 + x^2 + 2x - 10}$

$3x^4 + 0x^3 + 6x^2$

$x^3 - 5x^2 + 2x$

$x^3 + 0x^2 + 2x$

$-5x^2 + 0x - 10$

$-5x^2 + 0x - 10$

0

answer is:
$3x^2 + x - 5$

Using the "Box" for Polynomial Division

Expand using the Box:

(x+3)(2x-5)

	2x	-5
x	$2x^2$	-5x
+3	+6x	-15

$2x^2 + x - 15$

$x + 4 \;\overline{)\; x^2 + 9x + 20}$

(x+4)( )$= x^2 + 9x + 20$

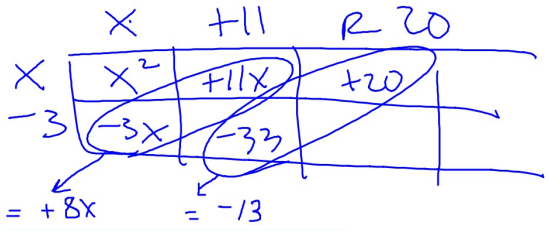
	x	+5
x	x^2	+5x
+4	+4x	20

$= 9x$ $= 20$

Answer is: x + 5

Use the "Box" for Polynomial Division

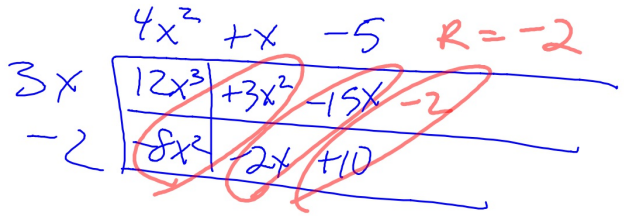
$$\frac{x^2 + 8x - 13}{x - 3}$$



Answer is: x + 11 R= 20

Use the "Box" for Polynomial Division

$3x - 2 \overline{)\ 12x^3 - 5x^2 - 17x + 8}$



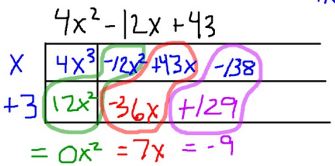
Answer is: $4x^2 + x - 5$ R= -2

Use the "Box" for Polynomial Division

Find this quotient: $\frac{4x^3 + 7x - 9}{x + 3}$

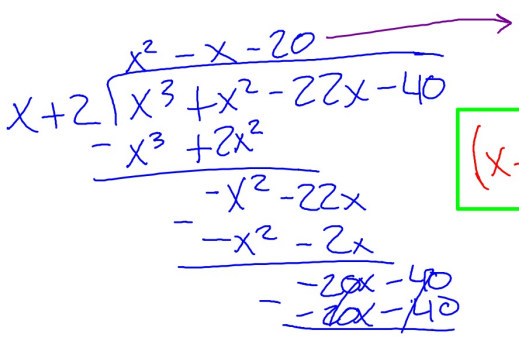
$4x^3 + 0x^2 + 7x - 9$

Since the dividend is missing an x^2 Term put $0x^2$ in its place

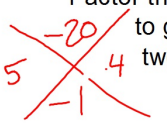


Answer is: $4x^2 - 12x + 43$ R= -138

If $x + 2$ is a factor, use polynomial division to factor $x^3 + x^2 - 22x - 40$ completely.



Factor the quotient to get the remaining two factors.



$(x-5)(x+4)(x+2)$

No remainder means that x+2 is really a factor.

Graph to find all REAL solutions. $x^3 - 4x^2 + x + 26 = 0$

x = -2

since -2 is a real solution what is a factor of the original polynomial?

(x+2)

If x+2 is a factor use polynomial division to find the other factor.

$$x+2 \;\overline{)\; x^3 - 4x^2 + x + 26}$$

$x^2 - 6x + 13$

$-(x^3 + 2x^2)$

$-6x^2 + x$

$-(-6x^2 - 12x)$

$13x + 26$

$13x + 26$

0

Find the zeros of this other factor.

$x^2 - 6x + 13$

this doesn't factor so use the Quadratic Formula