Factor Theorem

According to this work, is x-3 a factor of p (x) = $5x^3 - 2x^2 + x - 120'$

	x ³	x^2	х	С
3	5	-2	1	-120
	↓	15	39	120
	5	13	40	0

@Yes, x-3 is a factor of p(x) since the remainder is 0. @No, x-3 is not a factor of p(x) since the remainder is 0.@Can't determined @Partly true but in exception cases @ A

This work shows $x^2 - 3x + 5 \div x - 2$. What information does this reveal?

	x^2	х	С	
2	1	-3	5	
	\downarrow	2	-2	
	1	-1	3	

@x - 2 is a factor of $x^2 - 3x + 5$ since the remainder is 3.@x - 2 is not a factor of $x^2 - 3x + 5$ since the remainder is 3.@Can't determined @Partly true but in exception cases@ A

This work shows $x^2 - 3x + 5 \div x - 2$. What information does this reveal?

	x^2	х	С	
2	1	-3	5	
	\downarrow	2	-2	
	1	-1	3	

@2 is a solution of $x < \sup^{2 < \sup} - 3x + 5$ since the remainder is 3.@2 is not a solution of $x < \sup^{2 < \sup} - 3x + 5$ since the remainder is 3.@Can't determined @Partly true but in exception cases@ (B)

Match the following appropriately. It is important you can recognize the connection between factors and solutions.@x-1 is a factor of p(x).-1/2 is a solution of p(x).@x - 3 is a factor of p(x).-0 is a solution of p(x).@2x - 3 is a factor of p(x).-3/2 is a solution of p(x).@x is a factor of p(x).-3 is a solution of p(x).@(C)

Match the following appropriately. It is important you can recognize the connection between factors and solutions.@5/3 is a solution of p(x).-x + 3 is a factor of p(x).@5 is a solution of p(x).-x - 5 is a factor of p(x).@-3 is a solution of p(x).-3x - 5 is a factor of p(x).@-5 is a solution of p(x).-x + 3 is a factor of p(x).@(B)

What do we know about $p(x) = 3x^4 + 2x^3 - 5x + 4$ based off of the work shown here? Read carefully

	x^4	x^{3}	x^2	Х	с
1	3	2	0	-5	4
	\downarrow	3	5	5	0
	3	5	5	0	4

@1 is a solution @1 is not a solution @x - 1 is a factor @x+1 is not a factor @(B)

Match the following:

	x^2	Х	c
-2	5	-10	-40
	\downarrow	-10	40
	5	-20	0

@x + 2...-0@-2...-is a solution of 5x < sup > 2 </sup > - 10x + 40@ The remainder is...-is a factor of 5x < sup > 2 </sup > - 10x - 40@ 5x < sup > 2 </sup > - 10x - 40 is being divided by...-x+2@(D)

More than one answer is correct. x^3 \mathbf{x}^2 х c 7 1 2 -58 -35 7 63 35 \downarrow 9 5 1 0

Q.8

@x-7 is a factor of p(x).@x+7 is a factor of p(x).@-7 is a solution o p(x).@7 is a solution of p(x).@ (A)

Q.9 Which statement accurately describes what this work demonstrates?



 $(@x + 6 \text{ is a factor of } x < \sup)^{3 < / \sup)^{2}} - x < \sup)^{2 < / \sup)^{2}} - 40x + 13 @X + 6 \text{ is not a factor of } x < \sup)^{3 < / \sup)^{2}} - x < \sup)^{3 < / \sup)^{2}} - 40x + 13 @x - 6 \text{ is not a factor of } x < \sup)^{3 < / \sup)^{2}} - x < \sup)^{2 < / \sup)^{2}} - 40x + 13 @x - 6 \text{ is a factor of } x < \sup)^{3 < / \sup)^{2}} - x < \sup)^{2 < / \sup)^{2}} - 40x + 13 @(X + 13)^{2} (X + 13)$

Q.10 Complete the problem shown here. Use the remainder to determine whether 5 is a solution of $p(x) = 2x^3 - 12x^2 + 11x - 5$.

	x^{3}	\mathbf{x}^2	Х	c
5	2	-12	11	-5
	\downarrow	10		
	2	-2		

@5 is a solution of p(x) since the remainder is 0.@5 is a solution of p(x) since the remainder is 100.@5 is not a solution of p(x) since the remainder is 0.@5 is not a solution of p(x) since the remainder is 100@(A)

Q.11 Complete the problem shown here. Use the remainder to determine whether x-5 is a solution of $p(x) = 2x^3 - 12x^2 + 11x - 5$.

@x-5 is a factor of p(x) since 5 was a solution.@x-5 is not a factor of p(x) since 5 was not a solution.@x+5 is not a factor of p(x) since 5 was not a solution.@x+5 is a factor of p(x) since 5 was a solution@ (A)

Q.12 The work here shows that dividing $x^2 + 16$ by x+4 results in a remainder of 32. Which statement is true based upon that work shown here?



@-4 is a solution of x^{$^{2}}+16@4$ is a solution of x^{$^{2}}+16@x + 4$ is not a factor of x^{$^{2}}+16@x - 4$ is not a factor of x^{$^{2}}+16@C$

Q.13 This work shows $4x^2+17 \div x + 2$



@True@False@Can't determined @Partly true but in exception cases@ (A)

Q.14 Complete the synthetic division and use the remainder to determine a true statement concerning p(x) and its solutions.



(A).-2 is a solution of p(x) since the remainder is equal to 0.@-2 is not a solution of p(x) since the remainder is equal to 1.@-2 is not a solution of p(x) since the remainder is equal to 33.@2 is not a solution of p(x) since the remainder is equal to -1@(C)

Q.15 Complete the rest of this synthetic division problem. Determine the remainder.



@The remainder is 18.@The remainder is 0.@The remainder is 108.@The remainder is 28.@ (A)

Q.16 Based on the remainder you found, which statement is true?



@3 is a solution of 2x < sup > 3 < /sup > -15x + 9@3 is not a solution of 2x < sup > 3 < /sup > -15x + 9.@-3 is a solution of 2x < sup > 3 < /sup > -15x + 9.@-3 is not a solution of 2x < sup > 3 < /sup > -15x + 9.@-3 is not a solution of 2x < sup > 3 < /sup > -15x + 9.@-3 is not a solution of 2x < sup > 3 < /sup > -15x + 9.@-3 is not a solution of 2x < sup > 3 < /sup > -15x + 9.@-3 is not a solution of 2x < sup > 3 < /sup > -15x + 9.@-3 is not a solution of 2x < sup > 3 < /sup > -15x + 9.@-3 is not a solution of 2x < sup > 3 < /sup > -15x + 9.@-3 is not a solution of 2x < sup > 3 < /sup > -15x + 9.@-3 is not a solution of 2x < sup > 3 < /sup > -15x + 9.@-3 is not a solution of 2x < sup > 3 < /sup > -15x + 9.@-3 is not a solution of 2x < sup > 3 < /sup > -15x + 9.@-3 is not a solution of 2x < sup > 3 < /sup > -15x + 9.@-3 is not a solution of 2x < sup > 3 < /sup > -15x + 9.@-3 is not a solution of 2x < sup > 3 < /sup > -15x + 9.@-3 is not a solution of 2x < sup > 3 < /sup > -15x + 9.@-3 is not a solution of 2x < sup > 3 < /sup > -15x + 9.@-3 is not a solution of 2x < sup > 3 < /sup > -15x + 9.@-3 is not a solution of 2x < sup > 3 < /sup > -15x + 9.@-3 is not a solution of 2x < sup > 3 < /sup > -15x + 9.@-3 is not a solution of 2x < sup > 3 < /sup > -15x + 9.@-3 is not a solution of 2x < sup > 3 < /sup > -15x + 9.@-3 is not a solution of 2x < sup > 3 < /sup > -15x + 9.@-3 is not a solution of 2x < sup > 3 < /sup > -15x + 9.@-3 is not a solution of 2x < sup > 3 < /sup > -15x + 9.@-3 is not a solution of 2x < sup > 3 < /sup > -15x + 9.@-3 is not a solution of 2x < sup > 3 < /sup > -15x + 9.@-3 is not a solution of 2x < sup > -15x + 9.@-3 is not a solution of 2x < sup > -15x + 9.@-3 is not a solution of 2x < sup > -15x + 9.@-3 is not a solution of 2x < sup > -15x + 9.@-3 is not a solution of 2x < sup > -15x + 9.@-3 is not a solution of 2x < sup > -15x + 9.@-3 is not a solution of 2x < sup > -15x + 9.@-3 is not a solution of 2x < sup > -15x + 9

Q.17 Based on the remainder you found, which statement is true?



@x - 3 is not a factor of $2x < sup^{3 </sup^{>}} - 15x + 9$.@x-3 is a factor of $v2x < sup^{3 </sup^{>}} - 15x + 9$.@x + 3 is not a factor of $2x < sup^{3 </sup^{>}} - 15x + 9$.@x + 3 is a factor of $2x < sup^{3 </sup^{>}} - 15x + 9$.@ (A)

- Q.18 Assume that a polynomial has a solution at the x-value 4. Which of the following must be a factor of that same polynomial? @4x@x 4@x + 4@None of these @ (B)
- Q.19 Assume that x-2 is a factor of a polynomial. Which x-value must be a solution of that same polynomial?@The x-value -2@The x-value 2@The x-value 0@None of these (B)
- Q.20 Finish dividing $p(x) = 5x^3 + 34x^2 + 26x + C$ by x + 6. Determine what value C must equal if x + 6 is a factor of p(x).



@C would need to be equal to 0.@C would need to be equal to 12.@C would need to be equal to -12.@C would need to be equal to 300.@ (B)