

STATION #1 SOLVING POLYNOMIALS

SOLVE THE POLYNOMIAL

1) $f(x) = x^3 + 3x^2 - 10x - 24$

2) $y = 35x^3 + 102x^2 - 11x - 6$

3) $f(x) = x^3 + 2x^2 - 12x - 24$

4) $y = x^3 - 9x^2 + 25x - 25$

5) $f(x) = (x+3)(x-5)(x^2 - 4x - 2)$

6) $f(x) = (5x-1)(x+8)(x^2 + 9)$

ANSWER KEY

1) $x = -4, -2, 3$

2) $x = -3, -\frac{1}{5}, \frac{2}{7}$

3) $x = -2, 2\sqrt{3}, -2\sqrt{3}$

4) $x = 5, 2+i, 2-i$

5) $x = -3, 5, 2+\sqrt{6}, 2-\sqrt{6}$

6) $x = \frac{1}{5}, -8, 3i, -3i$

STATION #2**FACTORING POLYNOMIALS****FACTOR COMPLETELY**

1) $x^3 + x^2 - 4x - 4$

2) $125x^3 + 8$

3) $2x^4 - 10x^3 + 18x^2 - 90x$

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

5) $16x^5 - 54x^2$

ANSWER KEY

1) $(x+2)(x-2)(x+1)$

2) $(5x+2)(25x^2-10x+4)$

3) $2x(x^2+9)(x-5)$

4) $(x+1)(x-1)(x+2)(x-2)$

5) $2x^2(2x-3)(4x^2+6x+9)$

STATION #3

WRITING POLYNOMIALS

WRITE THE POLYNOMIAL (IN STANDARD FORM) WITH THE GIVEN SOLUTIONS

1) $x = -3, 4, 6$

2) $x = -\frac{3}{5}, \frac{1}{2}, 5$

3) $x = -\sqrt{2}, \sqrt{2}, 3$

4) $x = 1, 5i$

ANSWER KEY

1) $f(x) = x^3 - 7x^2 - 6x + 72$

2) $f(x) = 10x^3 - 49x^2 - 8x + 15$

3) $f(x) = x^3 - 3x^2 - 2x + 6$

4) $f(x) = x^3 - x^2 + 25x - 25$

STATION # 4**FUNDAMENTAL THEOREM
OF ALGEBRA**

- 1) HOW MANY REAL SOLUTIONS DOES THE FOLLOWING FUNCTION HAVE?

$$f(x) = x^3 - 3x^2 + 3x + 4$$

- 2) WHAT ARE THE REAL ZEROS FOR THE FUNCTION $f(x) = (x+8)(5x-1)(x^2-2x+3)$

- 3) DESCRIBE THE NATURE OF THE ZEROS FOR THE POLYNOMIAL $3x^3 - 13x^2 - 3x + 45$

- 4) HOW MANY RATIONAL SOLUTIONS DOES THE FOLLOWING FUNCTION HAVE?

$$f(x) = (x^2 - 5)(7x - 3)(x^2 + 4)$$

ANSWER KEY

- 1) 1 REAL SOLUTION

2) $x = -8, \frac{1}{5}$

- 3) 3 REAL (2 DISTINCT) / NO COMPLEX

- 4) 1 RATIONAL SOL'N

STATION #5

TOOL BOX

- 1) EVALUATE $f(-2)$ FOR THE FUNCTION
 $f(x) = -3x^3 + x^2 - 5x - 7$

- 2) SIMPLIFY THE FOLLOWING EXPRESSION
 $2(x-5)^2 - 3(7x-1)$

- 3) SIMPLIFY THE FOLLOWING EXPRESSION
 $2(x^2 + 4) - (x^2 + x - 5) + 4(3 - x)$

- 4) CLASSIFY THE FOLLOWING AS RATIONAL, IRRATIONAL, OR COMPLEX
A) $\frac{-2}{3}$ B) 7 C) $1 - \sqrt{5}$ D) $3 + 2i$

ANSWER KEY

- 1) $f(-2) = 31$
2) $2x^2 - 41x + 53$
3) $x^2 - 5x + 25$
4) A) RATIONAL B) RATIONAL
 C) IRRATIONAL D) COMPLEX