

Use when you get it right all by yourself

S Use when you did it all by yourself, but made a silly mistake

H Use when you could do it alone with a little help from teacher or peer

G Use when you completed the problem in a group

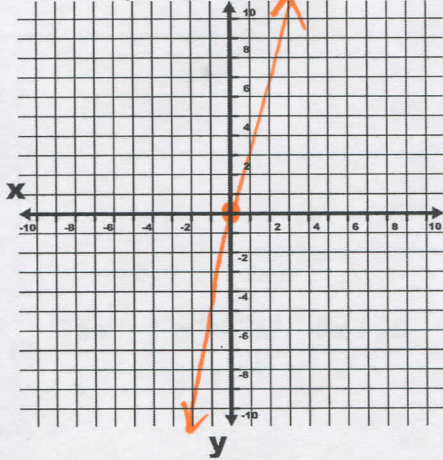
X Use when a question was attempted but wrong (get help)

N Use when a question was not even attempted

CONCEPTS	BASIC	INTERMEDIATE	ADVANCED
Standard form	1 - 3		
Naming polynomials	1 - 3		
Degree (odd/even)	1 - 3		
Leading coefficient (positive/negative)	1 - 3		
End behavior		1 - 3	
Increasing/Decreasing		1 - 3	
Domain & Range		1 - 3	
Multiplying Polynomials (Pascal's Triangle)		4 - 5	
Dividing Polynomials (Long & Synthetic)	9, 11, 12	6 - 8, 10, 13	
Synthetic Substitution/ Remainder Theorem	14 - 16		
Factoring Polynomials	17 - 22	17 - 22	17 - 22
Adding & Subtracting Polynomials		2, 3	1

1-3: Simplify each polynomial (put the polynomial in standard form), name the polynomial (by degree and type), sketch a graph, state the lead coefficient, state the end behavior, determine the increasing/decreasing intervals, and then state the domain and range in interval notation.

1. $y = 2x(x+5) - x^2(3-x)$



Window

-10
10
-10
10

1. $y = x^3 - x^2 + 10x$

Name: cubic trinomial LC: 1

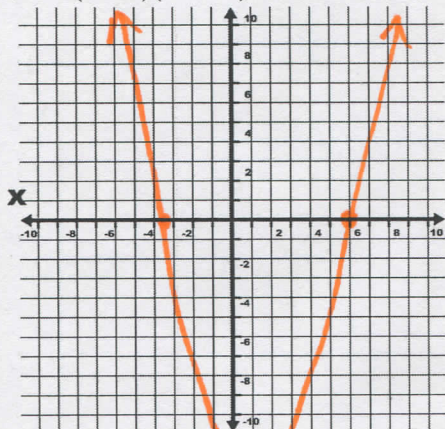
Degree: 3 Domain: $(-\infty, \infty)$ Range: $(-\infty, \infty)$

EB: As $x \rightarrow \infty, y \rightarrow \infty$, As $x \rightarrow -\infty, y \rightarrow -\infty$

Increasing: $(-\infty, \infty)$

Decreasing: Never

2. $y = 2(a-6)(2a+7)$



Window

-10
10
-100
10

2. $y = 4a^2 - 10a - 84$

Name: quadratic trinomial LC: 4

Degree: 2 Domain: $(-\infty, \infty)$ Range: $[-90.25, \infty)$

EB: As $x \rightarrow \pm \infty, y \rightarrow \infty$

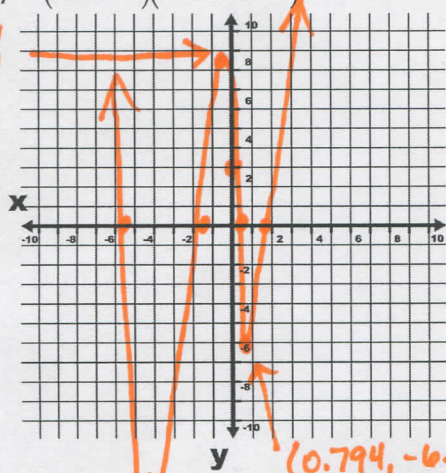
Increasing: $(1.25, \infty)$

Decreasing: $(-\infty, 1.25)$

$(0, -84)$ $(1.25, -90.25)$

3. $y = (2n^2 - 3)(n^2 + 5n - 1)$

$(-0.598, 8.299)$



window
-10
10
-150
10

3. $y = 2n^4 + 10n^3 - 5n^2 - 15n + 3$

Name: quartic polynomial LC: 2

Degree: 4 Domain: $(-\infty, \infty)$ Range: $[-145.186, \infty)$

EB: As $x \rightarrow \pm \infty, y \rightarrow \infty$

Increasing: $(-3.95, -0.598) \cup (0.794, \infty)$

Decreasing: $(-\infty, -3.95) \cup (-0.598, 0.794)$

$(-3.95, -145.186)$

4-5: Expand using Pascal's Triangle:

4. $(ab - 2c)^4$

4. $a^4b^4 - 8a^3b^3c + 24a^2b^2c^2 - 32abc^3 + 16c^4$

5. $(14 + y)^5$

5. $y^5 + 70y^4 + 1960y^3 + 27440y^2 + 192080y + 537824$

6-9: Divide using long division. Show your work! Box your final answer

6. $(2m + 4m^2 - 9m^3)(m + 2)^{-1}$

$-9m^2 + 22m - \frac{42m}{m+2}$

7. $(12r + 9r^3 - 15r^2) \div (3r - 1)$

$3r^2 - 4r$ R. $8r$

8. $(2x^3 - 10x^2 - 5) \div (x - 5)$

$$2x^2 \text{ R. } -5$$

9. $\frac{3x^3 - 8x^2 - 33x - 10}{3x^2 + 1}$

$$x - 2 - \frac{2x^2 + 34x + 8}{3x^2 + 0x + 1}$$

10-13: Divide using synthetic division. Show your work! Box your final answer.

10. $x - 2 \overline{) 3x^4 - 6x^2 - 24}$

$$3x^3 + 6x^2 + 6x + 12$$

(factor)

11. $\frac{5 + 5x - 8x^2 + 4x^3 - 3x^4}{x - 2}$

$$-3x^3 - 2x^2 - 12x - 19 \text{ R. } -33$$

12. $\frac{16x^2 - 13x^3 + 2x^4 - 9x + 20}{x - 5}$

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

13. $\frac{x^3 + 125}{x + 5}$

$$x^2 - 5x + 25$$

14-16: Use the remainder theorem to evaluate each of the polynomials. Show your work!

14. $P(x) = x^3 - 3$; $P(5)$

14. $P(5) = 122$

15. $R(x) = x^3 - 2x^2 + 3x - 1$; $R(4)$

15. $R(4) = 43$

16. $R(t) = 4t^4 - 3t^2 + 5$; $R(-3)$

16. $R(-3) = 302$

17-22: Factor the polynomials completely. Show all work.

17. $16m^2n + 12mn^2$

$4mn(4m + 3n)$

18. $a^2x - b^2x + a^2y - b^2y$

$(x+y)(a+b)(a-b)$

19. $4x^2 + 7x + 3$

$(4x+3)(x+1)$

20. $3a^2z - 27z$

$3z(a+3)(a-3)$

21. $x^3 + 125$

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

22. $n^4 - 81$

$(n^2+9)(n+3)(n-3)$

CYU Reflection: How far can you go: basic, intermediate, or advanced?

Rate your mastery level!

How confident are you with the skills this CYU covered? Circle the score you would give yourself.

