

Whiteboard Review for Unit 1 Test

1. Simplify $(3x - 2) + (2x^2 - 5x + 8)$

$$= 3x - 2 + 2x^2 - 5x + 8$$

$$= 2x^2 - 2x + 6$$

2. Simplify $(3x^2 - 5)^2 - (2x^2 + 5x - 4)$

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

$$= 9x^4 - 30x^2 + 25 - 2x^2 - 5x + 4$$

~~$$= 32x^2 + 4x + 29$$~~

$$= 9x^4 - 32x^2 - 5x + 29$$

3. Determine if the following polynomials are equivalent.

Note: What are the two methods? Do they always work?

a. $3(x^2 - 4x + 2)$

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

b. $-2(x^2 + 4x - 8) + 5(x^2 + 1) - (4x + 15)$

$$= -2x^2 - 8x + 16 + 5x^2 + 5 - 4x - 15$$

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

∴ The two polynomials are the same when simplified they are equivalent

*Note: You could also sub in a number to both equations. This method is acceptable for showing inequivalency but doesn't always work for equivalency.

4. Simplify each of the following

a. $3xy^2 \times -2x^2y^3$

$$= 6x^3y^5$$

b. $\frac{\cancel{3}x^2y \times -5\cancel{x}y^4}{-\cancel{3}x^2y^3} = \frac{-5y^2}{-x}$

$$\frac{\cancel{5}x^2y^5}{-\cancel{3}x^2y^3} = \frac{5y^2}{x}$$

$$= -\frac{5y^2}{x}$$

$$\begin{aligned} x &\neq 0 \\ y &\neq 0 \end{aligned}$$

5. Factor each polynomial

a. $4x^4 - 16$

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

b. $\underline{ab} + \underline{b^2} + \underline{6a} + \underline{6b}$

$$b(\underline{a+b}) + 6(\underline{a+b})$$

$$\underline{(a+b)}(b+6)$$

c. $6x^2 + 5x - 4$

A	S			
1	2	-1	7	2
6	3	+4	1	2

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

d. $y^2 + 9 - 6y - x^2$

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

$$(y - 3 - x)(y - 3 + x)$$

$$\rightarrow y^2 - 6y + 9$$

$$(y - 3)(y - 3)$$

$$(y - 3)^2$$

6. Simplify.

$$\frac{3n^3 - 3n^2}{8n^3 - 12n^2 + 4n}$$

$$= \frac{3n^2(n-1)}{4n(2n^2-3n+1)}$$

$$= \frac{3n^{\cancel{2}}(\cancel{n-1})}{4n(\cancel{n-1})(2n-1)}$$

$$= \frac{3n}{4(2n-1)} \quad \leftarrow \text{No brackets}$$

$$n \neq 0, 1, \frac{1}{2}$$

$$\begin{aligned} 2n - 1 &= 0 \\ 2n &= 1 \\ n &= \frac{1}{2} \end{aligned}$$

A	C
1	-1
2	-1

7. Expand and simplify

$$\frac{x^2 - 4}{(x+6)^2} \times \frac{x^2 + 9x + 18}{4 - 2x}$$

$$= \frac{\cancel{(x-2)}(x+2)}{\cancel{(x+6)}(x+6)} \times \frac{(x+3)\cancel{(x+6)}}{-2\cancel{(2+x)}}$$

$$= \frac{(x+2)(x+3)}{-2(x+6)}$$

$$= \frac{x^2 + 3x + 2x + 6}{-2(x+6)}$$

$$= \frac{x^2 + 5x + 6}{-2(x+6)}$$

$x \neq -6, 2$

8. Simplify.

$$\text{a. } \frac{3x^2}{x} + \frac{y}{2xy} - \frac{-2y^2}{x^2}$$

$$= \frac{6x^3y}{2x^2y} + \frac{xy}{2x^2y} - \frac{-4y^3}{2x^2y}$$

$$= \frac{6x^3y + xy + 4y^3}{2x^2y}$$

9. Simplify

BEDMAS

$$\frac{5m-n}{2m+n} - \frac{4m^2-4mn+n^2}{4m^2-n^2} \div \frac{6m^2-mn-n^2}{3m+15n}$$

$$n \neq -2m, \\ 2m, -\frac{m}{5}, 3m$$

$$= \frac{5m-n}{2m+n} - \frac{(2m-n)(2m-n)}{(2m-n)(2m+n)} \div \frac{(2m-n)(3m+n)}{3(m+5n)}$$

$$= \frac{5m-n}{2m+n} - \frac{\cancel{(2m-n)}\cancel{(2m-n)}}{\cancel{(2m-n)}(2m+n)} \times \frac{3(m+5n)}{\cancel{(2m-n)}(3m+n)}$$

$$= \frac{5m-n}{2m+n} - \frac{3(m+5n)}{(2m+n)(3m+n)}$$

$$= \frac{(5m-n)(3m+n)}{(2m+n)(3m+n)} - \frac{3(m+5n)}{(2m+n)(3m+n)}$$

$$= \frac{15m^2 + 5mn - 3mn - n^2 - 3m - 15n}{(2m+n)(3m+n)}$$

$$= \frac{15m^2 - n^2 + 2mn - 3m - 15n}{(2m+n)(3m+n)}$$

$$\begin{aligned} \#15 \quad e) \quad & \frac{(x-2y)^2}{x^2-y^2} \div \frac{(x-2y)(x+3y)}{(x+y)(x+y)} \\ & = \frac{\cancel{(x-2y)}(x-2y)}{(x-y)\cancel{(x+y)}} \times \frac{(x+y)\cancel{(x+y)}}{\cancel{(x-2y)}(x+3y)} \\ & = \frac{(x-2y)(x+y)}{(x-y)(x+3y)} \end{aligned}$$