

East Los Angeles College  
 Department of Mathematics  
 Math 115  
 Test 3

34 ✓

Use properties of exponents to evaluate the following. Write as positive exponents:

1.  $2^2 \cdot 2^3$

$2^{2+3}$

$2^5$

$32$

2.  $5^{-2} \cdot 5^4$

$5^{-2+4}$

$5^2$

$25$

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

$-2(-3)x^2 \cdot x^3$

$6x^{2+3}$

$6x^5$

4.  $x^{-4}x$

$x^{-4+1}$

$x^{-3}$

$\frac{1}{x^3}$

5.  $(x^2)^{-4}$

$x^{-8}$

$\frac{1}{x^8}$

6.  $(ab^2)^3$

$a^3 b^{2 \cdot 3}$

$a^3 b^6$

7.  $\frac{9x^{-2}}{3x}$

$3x^{-2-1}$

$3x^{-3}$

$\frac{3}{x^3}$

8.  $12x^2y^{-3} \cdot 2xy^2$

$12 \cdot 2 \cdot x^2 \cdot x^1 \cdot y^{-3} \cdot y^2$

$24x^3y^{-1}$

$\frac{24x^3}{y}$

9.  $(4x^2y^3)^2$

$4^2 x^{2 \cdot 2} y^{3 \cdot 2}$

$16x^4y^6$

10.  $(3xy^3)^{-2}$

$3^{-2} x^{-2} y^{-6}$

$\frac{1}{3^2 x^2 y^6}$

$\frac{1}{9x^2y^6}$

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

$2x^{1-(-3)}$   
 $2x^{1+3}$   
 $2x^4$

12.  $(2xy^3)^4$

$2^4 x^4 y^{3 \cdot 4}$   
 $16x^4 y^{12}$

13.  $\frac{20x^{-2}y}{4xy^{-3}}$

$5x^{-2-1} y^{1-(-3)}$   
 $5x^{-3} y^{4+3}$   
 $\frac{5y^4}{x^3}$

14.  $(4x^3y^2z)^0$

1

Add/Subtract the following polynomials.

15.  $(2x^3 - x^2 + 3x - 5) + (x^3 - 2x^2 + x - 4)$     16.  $(4x^2 - 5x + 3) - (x^2 - 7x - 11)$

$2x^3 - x^2 + 3x - 5 + x^3 - 2x^2 + x - 4$

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

$4x^2 - 5x + 3 - x^2 + 7x + 11$

$3x^2 + 2x + 14$

Multiply the following polynomials.

17.  $-4x(3x+5)$

$\Rightarrow 4$   
 $-12x^2 - 20x$

18.  $(2x+5)(3x-2)$

$2x \cdot 3x - 2 \cdot 2x + 5 \cdot 3x - 5(2)$

$6x^2 - 4x + 15x - 10$

$6x^2 + 11x - 10$

8 ✓  
 12 ✓

19.  $(x-4)^2 = (x-4)(x-4)$

20.  $(x-3)(2x^2+4x-7)$

	$x$	$-4$
$x$	$x^2$	$-4x$
$-4$	$-4x$	$16$

$$x^2 - 4x - 4x + 16$$

$$x^2 - 8x + 16$$

	$2x^2$	$4x$	$-7$
$x$	$2x^3$	$4x^2$	$-7x$
$-3$	$-6x^2$	$-12x$	$21$

$$2x^3 - 2x^2 - 12x + 21$$

21.  $(x+5)(x-5)$

22.  $(2x+3)(2x-3)$

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

$$x^2 - 25$$

	$2x$	$-3$
$2x$	$4x^2$	$-6x$
$3$	$6x$	$-9$

$$4x^2 - 9$$

Divide the following polynomials.

23.  $\frac{16x^4 - 12x^3 + 8x^2}{4x}$

24.  $\frac{8x^2 - 4x}{4x}$

$$\frac{16x^4}{4x} - \frac{12x^3}{4x} + \frac{8x^2}{4x}$$

$$\frac{8x^2}{4x} - \frac{4x}{4x}$$

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

$$2x - 1$$

25. What is your name?

Solutions.

12 ✓