

Math 101, Ch. 4, Practice Test

**1. Simplify**

**(a)**  $(x - 8) + (x + 3)$

**(b)**  $(4x - 8) - (x + 5)$

**2. Simplify**

**(a)**  $(x^2 + 6x - 5) + (x^2 + 3x - 2)$

**(b)**  $(x^2 + 5x - 5) - (x^2 + 6x - 2)$

**3. If  $x = 2$ , evaluate**

$x^3 - 3x + 7$

**4. If  $x = -2$ , evaluate**

$5x^3 - 3x^2$

**5. Simplify**

**(a)**  $-10x^4 \cdot 3x^6$

**(b)**  $-2x^5y(-5xy^3)$

**6. Simplify**

**(a)**  $(2x^3y^4)^5$

**(b)**  $(-4xy^6)^2$

**7. Simplify**

$$\frac{45x^3y^5}{18x^2y^5}$$

**8. Simplify**

$$\left(\frac{3x^5}{18}\right)^2$$

<p><b>9. Multiply</b></p> <p>(a) <math>-6x(x + 5)</math></p>          <p>(b) <math>4x^2(x - 2)</math></p>	<p><b>10. Multiply</b></p> <p>(a) <math>5x(x^2 - 6x + 7)</math></p>          <p>(b) <math>-3(x^2 - 4x + 5)</math></p>
<p><b>11. Multiply and simplify</b></p> <p><math>7 + 3(2x - 1)</math></p>	<p><b>12. Multiply and simplify</b></p> <p><math>x(x + 6) + 4(x + 5)</math></p>

**13.** Multiply and simplify.

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

**14.** Multiply and simplify.

$$(x - 8)(x + 9)$$

**15.** Multiply and simplify.

$$(3x + 4)(5x - 6)$$

**16.** Multiply and simplify.

$$(2x + 1)(3x^2 - 4x + 6)$$

**17.** Divide.

$$x + 5 \overline{)x^2 + 6x + 5}$$

**18.** Divide.

$$(x^3 + 2x - 3) \div (x + 3)$$

$$x + 3 \overline{) \quad \quad \quad}$$

**19.** Write in scientific notation

**(a)** 0.0732

**(b)** 8,450,000,000

**20.** Write in standard form

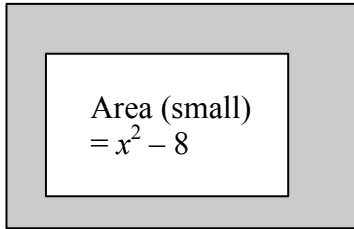
**(a)**  $9.54 \times 10^5$

**(b)**  $1.57 \times 10^{-6}$

<p><b>21.</b> Simplify.</p> <p>(a) <math>-a^0 - b^0</math></p> <p>(b) <math>2^0 - 2</math></p>	<p><b>22.</b> Simplify. Write your answer using positive exponents only.</p> <p>(a) <math>5x^6 \cdot 4y^{-2}</math></p> <p>(b) <math>20x^{-8}y^5 \cdot x^2</math></p>
<p><b>23.</b> Simplify. Write your answer using positive exponents only.</p> <p>(a) <math>\frac{x^8}{x^{-5}}</math></p> <p>(b) <math>\frac{3x^{-2}x^4}{x^{-9}x^0}</math></p>	<p><b>24.</b> Simplify. Write your answer using positive exponents only.</p> <p>(a) <math>\left(\frac{x^9}{9}\right)^{-2}</math></p> <p>(b) <math>(3x^{-7})^{-3}</math></p>

25. Find the area of the shaded region.

$$\text{Area (large)} = 8x^2 + 4x - 2$$



**Addition Table**

+	1	2	3	4	5	6	7	8	9	10
1	2	3	4	5	6	7	8	9	10	11
2	3	4	5	6	7	8	9	10	11	12
3	4	5	6	7	8	9	10	11	12	13
4	5	6	7	8	9	10	11	12	13	14
5	6	7	8	9	10	11	12	13	14	15
6	7	8	9	10	11	12	13	14	15	16
7	8	9	10	11	12	13	14	15	16	17
8	9	10	11	12	13	14	15	16	17	18
9	10	11	12	13	14	15	16	17	18	19
10	11	12	13	14	15	16	17	18	19	20

**Multiplication Table**

×	1	2	3	4	5	6	7	8	9	10
1	1	2	3	4	5	6	7	8	9	10
2	2	4	6	8	10	12	14	16	18	20
3	3	6	9	12	15	18	21	24	27	30
4	4	8	12	16	20	24	28	32	36	40
5	5	10	15	20	25	30	35	40	45	50
6	6	12	18	24	30	36	42	48	54	60
7	7	14	21	28	35	42	49	56	63	70
8	8	16	24	32	40	48	56	64	72	80
9	9	18	27	36	45	54	63	72	81	90
10	10	20	30	40	50	60	70	80	90	100

**Rules for Signed Numbers**

<i>Addition</i>	<i>Subtraction</i>
Positive + Positive = Positive <b>POSITIVE</b> + Negative = Positive Positive + <b>NEGATIVE</b> = Negative Negative + Negative = Negative Numbers in bold, capital letters have a greater magnitude than nonbold, lower case partner number.	$A - B = A + (-B)$
<i>Multiplication</i>	<i>Division</i>
Positive $\times$ Positive = Positive Positive $\times$ Negative = Negative Negative $\times$ Positive = Negative Negative $\times$ Negative = Positive	Positive $\div$ Positive = Positive Positive $\div$ Negative = Negative Negative $\div$ Positive = Negative Negative $\div$ Negative = Positive

<b>Rules for Exponents</b>	
<i>Product Rule</i>	$a^m \cdot a^n = a^{m+n}$
<i>Quotient Rule</i>	$\frac{a^m}{a^n} = a^{m-n} \quad (a \neq 0)$
<i>Power Rules</i>	$(a^m)^n = a^{mn}$ $(ab)^m = a^m b^m$ $\left(\frac{a}{b}\right)^m = \frac{a^m}{b^m} \quad (b \neq 0)$
<i>Zero Exponent</i>	$a^0 = 1 \quad (a \neq 0)$
<i>Negative Exponent</i>	$a^{-n} = \frac{1}{a^n} \quad (a \neq 0)$