

Please note that most exercises on this review cover material from Beginning Algebra (Math 98). We will extensively review topics from Intermediate Algebra (Math 99) but there will be no class time for topics from earlier classes. As a result, students must review these topics on their own. Handouts were provided. Use them as you need. Please let me know if you have any question or if you need any help.

1. Simplify each of the following expressions.

a) $(-2)^4$

d) $(a^3)^4$

g) $\frac{(8a)^2}{16a^3}$

i) $\frac{-3x^4}{(-3x)^2}$

b) -2^4

e) $(2a^3)(2a)^2$

j) $2^{143} \cdot 2^{143}$

c) a^3a^4

f) $\frac{8a^2}{16a^3}$

h) $(-2x)^2(-2x^2)$

k*) $2^{143} + 2^{143}$

2. Simplify each of the following expressions.

a) $(2x - 5)^2$

d) $(3a - 1)^2 - (2a - 7)(3a - 5)$

f) $(2a + 3b) - (3a - 5b)$

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

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

e) $(3m^7 - 1)^2$

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

3. Convert each of the following decimal to a fraction. You do NOT have to simplify the fraction.

a) 1.27

b) $1.\bar{5}$

c) $0.14\bar{6}$

d) $0.5\overline{26}$

4. a) Expand $(2m - 3)^2$

b) Expand $(-2m + 3)^2$

c) Explain your results from parts a) and b)

5. Completely factor each of the following.

a) $2x^2 + 18$

b) $x^4 - 1$

c) $9x^{10} - 49$

d) $(3a - b)^2 - (2a + b)^2$

6. Solve each of the following equations. Make sure to check your solutions.

a) $2(x - 1) - (x - 4) = 3(x + 8)$

c) $\frac{3 - x}{4} - \frac{10 - 3x}{5} = x + 2$

b) $\frac{3}{4}(x - 2) = \frac{2}{3}(x + 6) - 3$

e) $(2x - 1)(3x + 2) = 6(x - 2)^2 - 1$

g) $y - (y - 3)^2 = 4 - (y + 1)(y - 1)$

7. Graph each of the following.

a) $y = -\frac{1}{2}x + 3$

b) $3x + 2y = -12$

c) $x = 2$

d) $y = 3$

Answers

1.) For examples with detailed solutions and more practice, see handout Exponents.

a) 16 b) -16 c) a^7 d) a^{12} e) $8a^5$ f) $\frac{1}{2a}$ g) $\frac{4}{a}$ h) $-8x^4$ i) $-\frac{x^2}{3}$ j) 2^{286} k) 2^{144}

2.) For examples with detailed solutions and more practice, see handout Simplifying Algebraic Expressions.

a) $4x^2 - 20x + 25$ b) $-x^2 + 6x - 9$ c) $4x^6 - 25$ d) $3a^2 + 25a - 34$ e) $9m^{14} - 6m^7 + 1$
 f) $-a + 8b$ g) $2x^2 + 32$

3.) For examples with detailed solutions and more practice, see handout Fractions and Decimals.

a) $\frac{127}{100}$ b) $\frac{14}{9}$ c) $\frac{132}{900}$ d) $\frac{521}{990}$

4.) a) $(2m - 3)^2 = 4m^2 - 12m + 9$ b) $(-2m + 3)^2 = 4m^2 - 12m + 9$
 c) $2m - 3$ and $-2m + 3$ are opposites. When we square a number and its opposite, we get the same result.

5.) For examples with detailed solutions and more practice, see handout Factoring A.

a) $2(x^2 + 9)$ b) $(x^2 + 1)(x + 1)(x - 1)$ c) $(3x^5 - 7)(3x^5 + 7)$ d) $5a(a - 2b)$

6.) For more examples with detailed solutions and practice, see handout Review of Linear Equations.

a) -11 b) 30 c) -5 e) 1 g) 2

7.) For more examples with detailed solutions and practice, see handout Graphing Lines.

a) $y = -\frac{1}{2}x + 3$

b) $3x + 2y = -12$

c) $x = 2$

d) $y = 3$

