

## Math 1021 Review for Test 2 (6.1-6.6 inclusive)

NOTE THIS IS NOT ALL ENCOMPASSING. THERE MIGHT BE TYPES OF PROBLEMS ON THE TEST THAT ARE NOT ON THIS REVIEW. You must know how to do any of the types of homework problems that were assigned. **Any problem similar to a sample problem or a homework problem may appear on the test. You are also responsible for the examples worked out in each assigned section in the textbook even though they are not done in class.**

**In 1-5 Solve the equations:**

1.  $\sqrt{3x-2} = 5$       2.  $\sqrt{x+2} = -4$       3.  $x-3 = \sqrt{3x-11}$

4.  $\sqrt[3]{x} = -1$       5.  $\sqrt{4x+11} - \sqrt{1-x} = 0$

6. For the given functions, find the indicated function values.

a.

$$f(x) = \sqrt{5-3x}; \quad f(1) \text{ and } f(2)$$

b.  $g(x) = \frac{1}{\sqrt{x}}; \quad g(4) \text{ and } g(1)$

7. Find the domain of the functions f and g in problem 6, express in interval notation.

8. Simplify. Assume that letters represent any real number.

a.

$$\sqrt{(-5t)^2}$$

b.

$$\sqrt{x^2+2x+1}$$

c.

$$\sqrt[3]{-\frac{1}{27}}$$

d.  $-\sqrt[4]{625}$

e.  $\sqrt[4]{-625}$

f.  $\sqrt[3]{-625}$

9. Write each in simplest radical form where appropriate. Variables represent positive values.

a.  $\sqrt{12x^3y^5z^2}$       b.  $\sqrt[3]{\frac{8a^7}{27b^3}}$       c.  $\sqrt[4]{\frac{81x^{21}}{16x^{13}}}$

10. Rationalize the denominator in each of the following.

(a)  $\frac{5}{\sqrt{5x}}$     (b)  $\frac{x}{\sqrt{x}}$     (c)  $\frac{1}{\sqrt{x-1}}$     (d)  $\frac{\sqrt{a}-\sqrt{b}}{\sqrt{b}-\sqrt{a}}$

11. Express the following in terms of rational exponents.

(a)  $\left(\sqrt{(x+1)^3}\right)^5$     (b)  $\left(\sqrt{(x-1)(x-2)}\right)^3$     (c)  $\sqrt[3]{\sqrt{x}}$

12. Simplify the following, Express in terms of positive exponents. Variables represent positive values.

(a)  $(27x^3)^{2/3}$     (b)  $(16x^8y^{-4})^{1/4}$     (c)  $\left(\frac{x^{-1/3}y^{1/2}}{x^{-1/4}y^{1/3}}\right)^6$

(d)  $3^{-5/2}a^{4/5}b^{-7/3}$     (e)  $\sqrt[6]{(-4x)^2}$

13. Perform the indicated operations and simplify if possible.

(a)  $3\sqrt{a^4} + 4\sqrt[3]{8a^6}$     (b)  $\sqrt{6b} - \sqrt{24b^3}$     (c)  $(3 - \sqrt{x})(3 + \sqrt{x})$

(d)  $(2\sqrt{a} - 3\sqrt{b})^2$     (e)  $2\sqrt[3]{y}(4\sqrt[3]{y} - 2\sqrt[3]{y^2})$     (f)  $\sqrt[3]{18y^3}\sqrt[3]{4x^2}$

(g)  $5\sqrt[3]{16y^4} + 7\sqrt[3]{2y}$     (h)  $\frac{\sqrt[4]{(x-1)^3}}{\sqrt{x-1}}$