

**Math 1021 Review for Test 2 – Answer Key**

1)  $x = 1, 2$     2)  $x = -1$     3) All real numbers except  $x = -2, x = -1$     4)  $x = 3$

5)  $x = 9$  (check necessary)    6)  $x = 1/4$  (check necessary)    7)  $x = 4, x = 5$

8)  $x = 12$     9)  $x = -2$

10) a.  $f(1) = \sqrt{2}, f(2) = \sqrt{-1}$  Does not exist as a real number

b.  $g(4) = \frac{1}{2}, g(1) = 1$

11) a.  $(-\infty, \frac{5}{3}]$     b.  $(-\infty, 0) \cup (0, \infty)$

12) a.  $5|t|$     b.  $|x + 1|$     c.  $-\frac{1}{3}$     d.  $-5$

e. Does not exist as a real number    f.  $-5\sqrt[3]{5}$

13) a.  $2xz y^2 \sqrt{3xy}$     b.  $\frac{2a^2}{3b} \sqrt[3]{a}$     c.  $\sqrt[12]{2^4 3^3}$     d.  $\sqrt[12]{w}$     e.  $\frac{3}{2} x^2$

14) a.  $\frac{\sqrt{5x}}{x}$     b.  $\sqrt[3]{x^2}$     c.  $\frac{\sqrt{x+1}}{x-1}$     d.  $\frac{y \sqrt[3]{9x^2y}}{3x^2}$     e.  $-1$

15) a.  $(x + 1)^{\frac{15}{2}}$     b.  $(x - 1)^{\frac{3}{2}}(x - 2)^{\frac{3}{2}}$     c.  $(x)^{\frac{1}{6}}$

16) a.  $9x^2$     b.  $\frac{2x^2}{y}$     c.  $\frac{y}{x^{1/2}}$  or rationalized  $\frac{y\sqrt{x}}{x}$     d.  $\frac{a^{\frac{4}{5}}}{\frac{5}{3^2} \frac{7}{b^3}}$     e.  $\sqrt[3]{4x}$

17) a.  $11a^2$     b.  $(1 - 2b)\sqrt{6b}$     c.  $9 - x$     d.  $4a - 12\sqrt{ab} + 9b$

e.  $8\sqrt[3]{y^2} - 4y$     f.  $2y\sqrt[3]{9x^2}$     g.  $(10y + 7)\sqrt[3]{2y}$     h.  $\sqrt[4]{x - 1}$

18) a.  $c = 2\sqrt{41}$     b.  $b = \sqrt{14}$     c.  $a = \sqrt{1 - x^2}$

19)  $8\sqrt{5}$  feet    20) Together it would take  $5 \frac{1}{7}$  hr.

21) The speed of the boat in still water is 24 mph.

22) They would need  $14 \frac{2}{17}$  gallons of paint.

**23)** 30 lb pounds of force will be needed to compress the same spring 5 in.