Math 1021 Review Test 3 Answer Key

1) $x = 3/2, 4$　　**2)** $x = 0, 2$　　**3)** $x = \pm\frac{3}{5}$　　　**4)** $x = \pm 2\sqrt{3}$

5) $x = 5 \pm 2\sqrt{7}$　　**6)** $x = \frac{2 \pm \sqrt{2}}{2}$　　**7)** $x = 3 \pm 2\sqrt{3}$　　　**8)** $x = \frac{3 \pm \sqrt{3}}{2}$

9) $x = 2 \pm i$　　　**10)** $x = -1 \pm \frac{\sqrt{6}}{2} i$

11) $1 + 5 \rightleftarrows i$　　　**12)** $12 - 5i$　　　**13)** $\frac{5}{13} + \frac{12}{13} i$

14) $x = \pm\sqrt{2}, \pm\sqrt{5}i$　　**15)** $y = 1, 16$　　**16)** $x = 16$

17) $x = \sqrt[3]{5}, 1$

18) **a.** Two different real-number solutions,
　　b. two different imaginary-number solutions.

19) **a.** x-intercepts: $(3, 0)$ and $(-1, 0)$; **b.** y-intercept $(0, -3)$;
　　c. The zeros of the function: -1,3;
　　d. Domain $(-\infty, +\infty)$, Range $[-4, +\infty)$;
　　e. Vertex $(1, -4)$; **f)** Axis of Symmetry $x = 1$;
　　g. Minimum value of the function: -4;
　　h. Relative minima of the function -4 at x= 1;
　　i. Neither;
　　j. Increasing $(1, +\infty)$, Decreasing $(-\infty, 1)$.

20) **a.** x-axis ; **b.** Origin.

21) Leading term: $-t^3$, leading coefficient: -1, degree: 3 and cubic.

22) $\frac{3}{2}$, multiplicity 1; -3, multiplicity 2 ; 2 multiplicity 5.

23) Since f(a)=474 and f(b)=1079, f(a) and f(b) have same signs. Therefore, using the intermediate value theorem, it cannot be determined whether the function f(x) has a real zero between a=5 and b=6.

24) **a.** Has a maximum of 15 real zeros; **b.** has a maximum of 15 x-intercepts; **c.** has a maximum of 15−1=14 turning points.
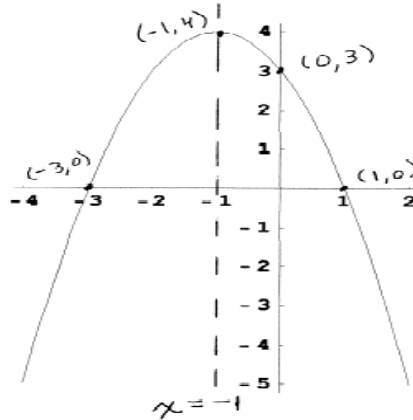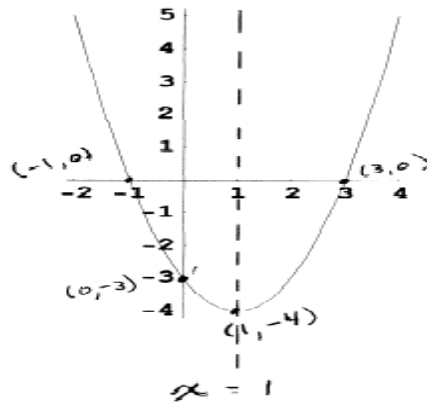**25)** D

26) 3/2 or 1.5 sec, 44ft.

27) The height of the TV is 10 inches and its length is 24 inches.

28) 500 ft by 250 ft.

29) Vertex: $(-1,4)$; Axis of Symmetry: $x = -1$; x-intercepts: $(1,0)$ and $(-3,0)$; y-intercept: $(0,3)$

30) Vertex: $(1,-4)$; Axis of Symmetry: $x = 1$; x-intercepts: $(3,0)$ and $(-1,0)$; y-intercept: $(0,-3)$

31. (d); $x = 2, x = -2, y = 0$ **32. (a);** $x = 2, x = -2, y = 8$
33. (c); $x = 2, x = -2,$ **34. (b);**

35. (a) $(-\infty, 5) \cup (5, \infty)$ (b) $(-\infty, -7) \cup (-7, -5) \cup (-5, \infty)$